LIVING WITH ONE FOOT IN THE GRAVE: the elderly in Early Anglo-Saxon England

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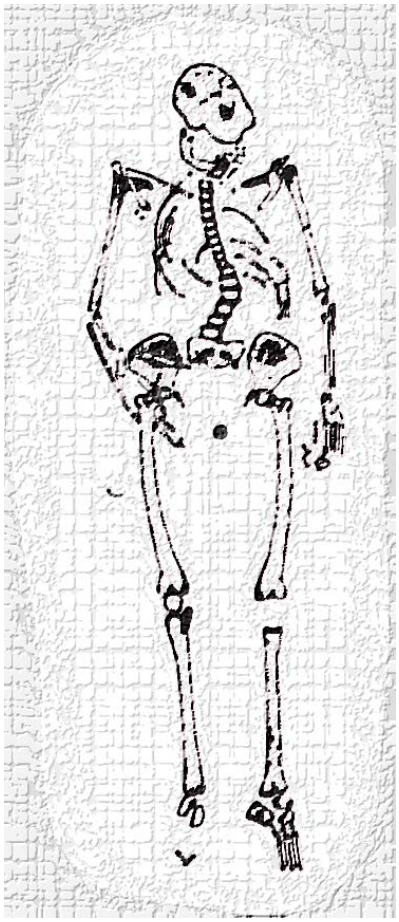
December 2017



A thesis submitted for the degree of Doctor of Philosophy of The Australian National University

DEDICATION

This thesis is dedicated to Colin Groves; Emeritus Professor; brilliant researcher; fount of knowledge; friend

Colin went gentle into that good night
And we raged, raged against the dying of his light

Declaration

This thesis is my own original work. Contributions by co-authors to papers are listed before each chapter in authorship declarations.

Signed

Christine M Cave

Acknowledgments

This research is supported by an Australian Government Research Training Program (RTP) Scholarship

It has been a long and windy road to the submission of this thesis and the stresses and strains (as well as the joys and successes) have been shared by others.

Firstly, to my Supervisor Professor Marc Oxenham, who has willingly engaged with the elderly of Early Anglo-Saxon England as well as this not quite elderly Early Anglo-Saxon student through thin, thick, rejection and rewards over the far too many years of this project. He has been always available whether in the country or not, and without him, the elderly of this particular past would have remained invisible.

I also need to thank the rest of my supervisory panel. Dr Sam Lucy of Newnham College Cambridge has read and critiqued my work, offered advice and been an excellent excuse to visit Cambridge and Newnham. Thanks Sam. Professor Matthew Spriggs of ANU has also read work, attended seminars and been available whenever called upon.

Secondly, to the Fellowship of the Lunch Room and the Bian Lunch Peoples, who have accompanied me along this journey with laughter, smiles, conversation, support, and of course, lunch.

I also need to acknowledge those institutions who allowed me access to the very necessary skeletal material required for this thesis:

- The Duckworth Laboratory, Cambridge, who let me handle the Worthy Park material and the lab space in which to not drop it.
- The Dover Museum, holders of the Mill Hill, Deal, skeletons, who not only let me near those precious skellies but also supplied a lab assistant to make sure I didn't make off with the odd proximal phalanx
- And of course, Geoff Halliwell, that very lab assistant, of the Dover Archaeological Society and erstwhile Mill Hill excavator
- Finally, the University of Southampton, who allowed access to the vast Great Chesterford skeletal collection in their handsome lab.

And to Meg Walker, for doing the fiddly computer stuff that turns various documents in assorted formats into one smooth piece. You are a legend, Meg.

Last of all, but not least of all, my family who have put up with somewhat over-hopeful answers to that much asked question 'when will you be finished' for the period of this thesis.

- Dave, who has kept the home fires burning, the garden growing, the house in top condition during the long hours I have abandoned him to my university computer.
- Caroline and Lliam who have brightened my life by providing me with my only grandson, Dalton Henry Flynn
- Angus and Bec, whose faith in me never wavered, unless it was about finish dates
- Tom, for being Tom, steady, reliable and never too chatty
- Geraldine for doing some wonderful artwork, some of which has been published; it will be worth a fortune one day.

Abstract

Although historical documents and texts tell us otherwise, it is generally believed, not only by people without the expertise to know better, that nobody lived to what we would consider to be old age in the distant past. While it is certainly true that fewer individuals reached their allotted three score years and ten, most communities would have had people who lived to their seventies, eighties or even nineties. It is not that the elderly didn't exist, it is that the methods used to identify and age people in the past, combined with current attitudes, have rendered them invisible.

This thesis seeks to examine the implications on life, both social and physical, of living to old age in Early Anglo-Saxon England. To do this, elderly individuals first need to be made visible and identified. For this purpose then, an approach that identifies the invisible elderly in a cemetery context is proposed, illustrated with an Anglo-Saxon cemetery example.

Subsequently, the elderly in three Early Anglo-Saxon cemeteries are examined: Great Chesterford, Essex; Mill Hill, Deal, Kent; Worthy Park, Kingsworthy, Hampshire. The graves of the individuals buried in these cemeteries, their grave goods and their skeletal remains are discussed and elderly people are compared to those younger to determine whether old age increased their relative status, decreased it, or whether it remained the same. Whether sex or its close relative gender had an effect on these determinations is also explored. A case study involving two elderly women concludes this thesis.

In general, it is found that while the elderly are not a homogenous group, some evidence for respect is found, as well as some lesser treatment, and that the elderly are treated similarly in death to younger cohorts. In contrast, when examined through the lens of sex, it was found that males, fewer of whom reach the oldest age categories, tend to increase their status with age, while the status of females appears to decline from about the age of about thirty. The two women in the case study, who were given somewhat less than average burial treatment, may have been the last pagans in the community.

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Introduction

If I can't unsee this then you can't either

(Dani Mathers, as quoted by Agence_France-Presse 2016)

The above quote was posted online, accompanied by a photograph of a naked 70 year old woman - taken without her knowledge - changing in the gym. The viewpoint expressed by the quoted model, although drawing both criticism and legal action, exemplifies much of the modern world's attitude to the ageing body, especially the ageing female body. The view is common enough to have brought about a term to describe it: body shaming is defined by the online Oxford Living Dictionary (2017) as 'the action or practice of humiliating someone by making mocking or critical comments about their body shape or size'. Shamed bodies include not only the elderly, as in this case, but also the overweight, the badly dressed and those with physical deformities, to name just a few.

As evidenced by the above, the elderly, with their grey hair, wrinkled skin and badly dressed bodies, are disparaged within today's society; in addition, growing old is medicalised and pathologised, and a picture of dependency, weakness and infantilisation is often constructed (Gowland 2002: 23; Fry 1996: 129). Included in these constructions is a medical model of ageing, emphasising clinical aspects (and subsequently treatments) of biological ageing, taking precedence over and even defining normative biological, social and cultural realities (Estes and Binney 1989). Also, like weak and dependent children, the elderly can be confined to their own spheres, marginalised from 'regular' society, feminised and rendered powerless; they are frequently dismissed as asexual, passive and too frail (Gowland 2002: 23; Hockey and James 1993).

None of these categorisations are necessarily related to biological reality: the elderly can be healthy, strong, masculine and sexual and examples abound in our world today. For example, Robert Mugabe, Zimbabwean strong man and President for thirty years, still wielded control in his nineties, until recently. Donald Trump, a notoriously sexual being, has assumed leadership of the United States and thus the 'free world' in his seventies. Nevertheless, the representation of the elderly as weak and childish not only presents a paradigm meaningful to a society which obsesses over youth and beauty, but also relates to the perceived cyclical nature of human life (Gowland 2002: 23-24).

Negative attitudes to ageing and the ageing body are not isolated to the modern world. A verse by the Egyptian Vizier Ptahhotep lists physical deterioration of old age as far back as the 24th century BC, and Cicero included both physical and mental effects of advanced age in *On the Art of Growing Old* (Karenberg and Forstl 2006: 7). In about 20 BC, Horace described the inconveniences of old age, including lack of energy and greed for a longer life (Coffman 1934: 249). Chaucer's Wife of Bath worried about her loss of beauty (Coffman 1934: 269), while Shakespeare describes the sixth and seventh stages of life through physical loss: shrunken shanks, tooth loss, failing eyesight, taste and everything (Shakespeare 1564-1616).

Another modern negative trope about ageing is the common belief that the elderly did not exist in antiquity. Historical and textual evidence tells us otherwise, but this erroneous belief persists in both public and academic spaces today. One cause of this is that life expectancy at birth for ancient societies was low, around twenty or thirty years, or even lower; however, this is partly due to high infant mortality, and once early years are survived, an individual can expect to live much longer than that figure. For example, life expectancy at birth for Northern Ache females (indigenous hunter-gatherers of Paraguay) is 37.35 years, but those who reach 20 years can expect another 39.86 years on average (Chamberlain 2006: 29). Data about the Ache is obtainable because they live today, but age at death for ancient peoples is dependent on skeletal ageing, which is subject to biases, due to many things including the variability of age related degeneration and taphonomic issues (see Cave and Oxenham 2016). These biases tend to underage the elderly and thus lower life expectancy at birth calculations for past populations.

As noted earlier, historical documents and monuments record the presence of elderly individuals in the distant past, albeit in literate times (see examples in Cave and Oxenham 2016), but there is also evidence pointing to the presence of the elderly in the pre-textual past. For example, the existence of old individuals is attested by Aegean Neolithic (c 6500-3000 BC) anthropomorphic figurines of men and women with fleshy, flabby bodies and wrinkled faces (Kokkinidou and Nikolaidou 1997: 89, 103). Similarly, figures of women with 'humps' – possibly a result of osteoporosis – were found at Kara Mourlar and Stefanovikion, while one of an old woman from Tzani Magoula has a body and face which is a testament to the ravages of age and/or an anatomical or medical problem (Kokkinidou and Nikolaidou 1997: 97).

This common fallacy is also fortified by the lack of studies focusing on or even recognising the existence of the aged in the past. This is amplified by skeletal analyses of cemeteries which lump the oldest individuals into a 45+ or 50+ years age category; examples include the Anglo-Saxon cemeteries of Tallington, West Heslerton, Empingham, Great Chesterford and Westgarth Gardens (Albone and Leahy 2000; Haughton and Powlesland 1999; Timby 1996; Waldron 1994b; West 1988). Every

individual will age until they die, and although not all will make elderly status, the visibility of age related changes means that those who do will be easily recognised by their respective societies. The difference between a fit and active fifty-year-old marathon runner and a frail nursing home resident of ninety is obvious to even the most cursory glance, but in skeletal estimations these two individuals would be placed in the same age category. The result is that the social meaning of old age in antiquity, and the implications of a person's reaching it have been rarely examined, and this lack skews our perceptions of past societies (Appleby 2010: 145).

Old age brings about changes in the body, including its ability to operate effectively, and alterations in appearance; these changes are both felt by the ageing individual and are visible to their contemporaries. This visibility means that old age and the culturally variable responses to it are an important facet in the negotiation of social structures and power relationships in a society (Appleby 2010: 145). Does old age change the social identity of an individual? What is the relationship between social change and the cultural understanding of ageing? As Appleby (2010: 146) argues, an understanding of ageing that is theoretically informed is essential to a full exploration of the past societies as well as the lives of elders in the past; without exploration of the actions, meanings and intentions of long-lived individuals we are unable to fully understand ancient communities. This brings to light another aspect of perceptions of old age: Bender (1997: 178) suggests that more notice should be taken of portrayals of deformities and the aged, a worthy suggestion. Nonetheless, it is noteworthy that she, like Kokkinidou and Nikolaidou (1997: 97), bundles advanced age together with deformity, although they are separate conditions. This conflation of two distinctive states devalues the importance of both in archaeological study, effectively marginalising them as separate from 'real' society.

This thesis aspires to fill a small part of this apparent lacuna in the archaeologies of age, personhood and sociality. In the context of Early Anglo-Saxon England, I will survey the social implications of living to a grand old age through examination of three cemeteries, the individuals buried in them and their mode of burial. What was life like for the oldest individuals in these communities? How were they perceived by

other members of their society? Did their social status change with age? Did the physicality of old age affect them to a great or small extent? How were their deaths memorialised?

To answer these questions, it is necessary to define what is meant by old age, and determine who in a community lived to reach it. Once those individuals are identified, their lives and deaths will be examined and analysed; I will also examine whether biological and cultural realities, like sex and gender, had an effect on these perceptions. A case study that comprehensively illustrates the lives of two elderly Anglo-Saxons will finalise this thesis.

This thesis is presented through a series of published or in review manuscripts, forming a thesis by compilation. The format is that governed by the Australian National University thesis by compilation guide (Appendix 6).

Chapter One begins by defining old age and examining the various meanings of age. It reviews studies of old age in archaeology and identifies areas which need further work.

Chapter Two introduces Early Anglo-Saxon England and the archaeology thereof. It also introduces the three cemeteries which will be the focus of this thesis and examines studies of age in Early Anglo-Saxon England.

Chapter Three provides a glimpse of early Anglo-Saxon England and the lives of those who lived the shortest time and who are often compared to those who lived the longest, the infants; this paper is published:

> CAVE, C.M. & OXENHAM, M.F. 2017. Out of the Cradle and into the Grave: the children of Anglo-Saxon Great Chesterford, Essex, England: pp. 179-95 in Murphy, E.M. & Le Roy, M. (eds.), Children, Death and Burial: Archaeological Discourses. Oxford: Oxbow Books.

Chapter Four identifies the invisible elderly in the Anglo-Saxon cemetery of Worthy Park, Kingsworthy, Hampshire; this paper is published:

> CAVE, C.M. & OXENHAM, M. 2016. Identification of the Archaeological 'Invisible Elderly': An Approach Illustrated with an Anglo-Saxon Example. *International Journal of Osteoarchaeology* 26**,** 163-75.

Chapter Five analyses the condition of the elderly in three Early Anglo-Saxon cemeteries. ; this paper is under review:

> CAVE, C.M. & OXENHAM, M. under review. Insights into the experiences of the elderly in Early Anglo-Saxon England

Chapter Six extends this analyses by examining sex and gender and their effects on ageing: this paper is published:

> CAVE CM & OXENHAM MF 2017. Sex and the elderly: Attitudes to long-lived women and men in early Anglo-Saxon England. *Journal of Anthropological Archaeology,* 48: 207-216. *doi:* https://doi.org/10.1016/j.jaa.2017.08.003

Chapter Seven provides a case study featuring the two oldest individuals buried on Mill Hill, Deal, Kent; this paper has been accepted for publication:

> CAVE, C.M. & OXENHAM, M.F. Accepted manuscript. Multiple Liminalities in Early Anglo-Saxon England: age, gender and cosmology. *In:* Lillehammer G & Murphy E (eds.) *Across the Generations: The Old and the Young in Past Societies* AM-UiS.

Chapter Eight brings concludes this study, discussing the implications of living to old age Early Anglo-Saxon England

NOTE: As published papers have had different formatting requirements, some minor formatting differences will be found between chapters.

Chapter 1 Age, death and invisibility

Elderly people have no status. Everybody knows that once you get old and you retire, you don't have any rights as elderly people.

(GWYNETH JONES, QUOTED BY FERGUSON 2017)

This thesis aims to examine the implications of living to a grand old age in Early Anglo-Saxon England. Before this can be done, the definition of a grand old age for that period needs to be determined and those individuals who lived long enough to have reached this status also need to be identified.

This chapter begins by defining old age, including examination of the various meanings (social, chronological, biological) of age. The reasons for the pervasive belief that old age did not exist in the past will be explored through the literature, and archaeological representations and constructions of old age will be examined.

Ageing, senescence and physical change

The four stages of man are infancy, childhood, adolescence and obsolescence.

(ART LINKLETTER 1965)

Ageing is a continuous process that begins at conception and stops only at death. With regard to the elderly, there are two key aspects of ageing that are of concern here: senescence and life span (Appleby 2010: 150; Crews 2007). Life span is the length of life of an individual or a species; human life history is characterised by growth until adulthood; then, as an individual reproduces and raises offspring, tissue function is maintained and repaired through continuous cell proliferation (Ricklefs 2008: 382; Crews 2007: 367). Over time, this maintenance and repair become more

expensive and less effective. Eventually senescence, the degeneration of the body occurring after full maturity and before death, sets in; and ultimately the individual dies (Ricklefs 2008: 385; Crews 2007: 367).

Many species, including humans, have been shown to exhibit consistency in ageing and age-related mortality, and it seems clear that the rate and timing of senescence is an evolved response (Gurven and Kaplan 2007-45; Ricklefs 2008-385; Rose 2011). While senescence involves degenerative and/or pathological processes, ageing itself is not pathological, but the likelihood of pathological change or disease increases with age (Appleby 2010: 157). Disease, however, affects all age groups; if such pathological change does not alter risk of death, it may relate to ageing, but not senescence; only change which increases the probability of death is senescent change (Crews 2007: 365-366). Although senescence is a progressive condition which will come to all who do not die early, age-related degeneration comprises multiple processes, aspects and consequences; it is a mosaic of functional decline rather than a neat, cumulative process and it is therefore highly variable between individuals (Appleby 2010: 151; Crews 2007: 367; Rose 2011: 44-45). While it can be expected that older skeletons are more likely to display pathological changes, this alone cannot indicate extreme age.

Although senescence is now viewed as age independent, the accumulation of evolutionarily determined senescent changes over an individual's life make it age related (Rose 2011: 44-45; Gurven and Kaplan 2007; Crews 2007). In their study of groups of extant hunter-gatherers and forager-horticulturists, Gurven and Kaplan (2007: 322) found that humans generally remain strong and vigorous until senescence sets in. They concluded that the human species has an evolved, characteristic life span: the modal age at death of the populations they studied was about seventy years and the similarity that they found in mortality profiles across varying environments was ‘impressive’ (Gurven and Kaplan 2007: 322). As this study examined people who lived traditional lives without modern markets, medicines or cultural buffers, alongside a greater exposure to environmental misfortunes (Gurven

and Kaplan 2007: 323; Crews 2007:365) these results are probably relevant to archaeological populations.

Ageing and senescence affect not only the body. Some diseases – e.g. dementia – particularly affect the brain, but physical conditions also have an effect on the mind; the state of both the body and the mind of an individual can affect not only their own attitudes and beliefs but also those of their community (Appleby 2010: 159; Jenkins 2000). This means that ageing is a process affecting and affected by cultural attitudes, behaviour and lifestyle as well as biological change (Crews 2007: 366; Appleby 2010: 159). Even though aging has its positive effects, e.g. wisdom, apparently, and it can possibly also bring greater power and freedom (Gowland 2002:303; Meigs 1976; Welinder 2001), the negative effects of old age have been recognised as long as humans have survived to reach this stage.

Age is not the only aspect of an individual's identity that will affect their standing. Status, sex, gender, personal power, ability or disability and emotional intelligence also affect identity, meaning that age, frequently critical in the social construction of a community, is only part of a complex whole (Welinder 2001: 163-164; Appleby 2011: 232-233; Gowland 2002: 26). As the human skeleton itself is not fixed or immutable but instead a dynamic entity, these disparate aspects of a person's identity fluctuate with time; this means that this complex fusion of identities is related to both physical reality and to the non-material aspects of a person's social identity (Sofaer 2006: 155). Thus age identity is also a fluid entity, always changing, a process rather than a single, neatly boxed fact. It shifts and moves in response to physical and social factors as well as relationships to class, gender, religion and ethnicity, fluctuating as an individual moves through life (Appleby 2011: 232). Throughout the life course, this changeability is regulated and channelled not only by societal attitudes but also attitudes of the individual and their own expectations regarding age-related norms (Appleby 2011: 232; Isopahkala-Bouret 2015; Karp 1988).

To illustrate, one trait that fluctuates as age increases is gender identity: both the very old and the very young are sometimes seen as genderless, or de-gendered (Silver 2003). For old women, this ambiguity is often assumed to be associated with menopause; in contrast the ethnographic literature suggests that changes that occur when age increases are only indirectly associated with age or biology and that social aspects of an individual's life, like widowhood, the marriage of a child or any other alteration in life circumstances can bring about a change in social identity (Appleby 2010; Gilchrist 1999). Changes like these may not always be negative but may bring about greater personal power and freedom from certain social limitations (e.g. Meigs 1976: 394).

It can be seen that attitudes stem from both physical and social processes, as specific practices, customs and beliefs increase or decrease social status and allow or disallow particular activities, rights or responsibilities (see Arber and Ginn 1995; Appleby 2011: 232-233). The material culture remains of such practices, activities and responsibilities make it possible for archaeologists to look back through the centuries to attempt to determine the social meaning of old age in the past. Before they can do that, however, they need to answer the question: how old is old?

Types of age

> To me old age is always fifteen years older than I am
>
> *(Bernard Baruch 1955)*

The question, how old is old, was succinctly defined by one early 20th century American presidential advisor: a person can be considered old if they are at least fifteen years older than the questioner or the person giving the answer. Couched in terms of the number of years, counted from birth, this is often referred to as 'chronological age' or 'calendar age', but it is clearly not the only way age can be understood.

Anthropological studies of pre-industrial cultures suggest that old age is more often defined by function or lack thereof, rather than in chronological terms (Keith 1980: 341). Such age designations usually relate to social standing, physical frailty or mental weakening. They are not necessarily explicitly defined or even generally followed, but are dependent on both the person being aged and the person/people doing the ageing (Keith 1980: 341). Welinder (2001: 165, 172) defines old age as 'the last one or two stages of a sequence of age stages' but states that in archaeological terms, being older that 50-60 years can be regarded as old. The definition of old age, according to Appleby (2010: 149), is partially dependent on the age structure of the population. Functional age designations may be labelled 'social age', where a person's social status places them in a particular age category (e.g. confirmation in the Catholic Church bestows the status of 'adult') or 'osteological' or 'biological age', which relates to the state of the body or the bones (Gowland 2002: 10). When a particular cohort is examined in a study like this, all three 'ages' may come into play.

Chronological age, in years and defined by a calendar, is independent of biology and social status (Appleby 2010: 149). It is also the goal that is sought by biological anthropologists when they use skeletal methods to determine an individual's age, even if such a concept was not considered or understood by the individuals and society under question (Appleby 2010: 149). .

'Biological age' relates to the integrity of human organs and systems, and is variable between individuals, and is evident not only in appearance, but also in physical and mental ability and general health outlook (Belsky et al. 2015: 4). In living subjects, physiological function is a significant factor, which in skeletal material may be able to be inferred. Some skeletal changes, like cranial suture closure, have no impact on life; some, tooth loss for example, change appearance but have minor physiological impact, while others (perhaps kyphosis of the spine or 'widow's hump') are both physically and visibly debilitating (Appleby 2010: 156). In addition, particular genetic predispositions may make certain individuals appear older or younger than their chronological ages. For example, members of the Mesman family, part of the named sample of the Spitalfields 'Middling Sort', had a tendency to die young (Molleson et

al. 1993: 129), and individuals like these may have had bodies that on appearance 'aged' at a faster rate than most. This means that even if a person is younger in calendar years than their body suggests, this biological age may be evident to their community, and also may have manifested itself in skeletal age changes. Although 'biological age' does not always closely correlate with 'chronological age' in these examples, the appearance and physicality of the individual involved would tend to agree with the biological age assessment.

It would seem that the 'age' estimated by the biological anthropologist is likely to be closely related to a range of factors including individual genetic profile, physical demands during life, culture, and possibly even geography, and consequently is biological or physical age, even though it is labelled as a calendar age (Appleby 2010: 151). As biology and culture are closely related, each affecting the other in an 'irreducible relationship', they both contribute to an individual's age status (Gowland 2002: 13). When material culture, like grave goods, is included in an analysis, social age may be evident. Social age is a cultural construction which applies behavioural norms, responsibilities and attitudes to individuals because of a particular social age identity (Gilchrist 2009b: 10). For example, when asking when Anglo-Saxon children count, Crawford (1991: 22) uses grave goods to infer that adulthood is conferred at about 11 or 12 years.

Nonetheless, as in the previous example, social and biological age are usually converted into calendar age; although the concept of calendar age is an ethnocentricity (Gowland 2002: 14). Moreover, while it is also essential that this and other preconceptions are recognised, chronological age is a useful concept because the intended audience (archaeologists, biological anthropologists and others from the modern world) understand its meaning implicitly. Despite its usefulness, determining the chronological age or even the skeletal age of an elderly individual is difficult, with inbuilt age estimation biases meaning that the elderly tend to be invisible in archaeological contexts.

Invisible elderly

At 71, I know I have definitely gone through the invisible barrier. The Bermuda Triangle where women fall into the ocean of male disinterest

(Eve Pollard 2017)

There are many reasons that the elderly are invisible in archaeological reports. Both Appleby (2010: 146) and Gowland (2002: 22) argue that the current lack of engagement with ageing is largely rooted in the attitudes to the aged found in modern Western societies. For the most part this is due to their removal from production, spatial segregation for the most dependent, patronising attitudes conveying physical and mental incompetence, or as reminders of death, but there are other practical considerations also involved.

One of these relates to the inbuilt biases of earlier archaeologists who uncritically assumed humans (not only humans in the past) were prime-aged males unless proved otherwise. Such assumptions are evidenced in writings which introduce a paper as important, describing the land as having 'many attractions for our Anglo-Saxon forefathers' or a paper with the title 'Man Makes Himself' (Akerman 1861: 327; Childe et al. 1940). This unspoken hegemony of male adulthood and subsequent marginalisation of other states of existence leads not only to the failure to examine these other states but also to the under-theorising of the dominant discourses (Gowland 2002: 21). This paradigm existed for a long time, but from about the 1970s, non-coincidentally about the time of the rise of the women's movement and female archaeologists, this began to change. It began to be recognised that women existed in the past and contributed to their societies, even when not identified (Dommasnes 1992). This 'discovery' of women in the past and the subsequent embracing of gender archaeology (e.g. Conkey and Spector 1984), opened the discipline to a wide range of approaches.

In the late 1980s Lillehammer (1989) announced that 'A child is born'. This was the birth of archaeology of the child, bringing it forward as its own subject, one which

focused on aspects of childhood in terms of biology, culture, sociability, agency, liminality and transformative otherness (Lillehammer 2015: 82). Lillehammer's recognition that the world of the child is not the same as the adult's world triggered the recognition that other 'worlds' existed (Lillehammer 2015: 82). More of these 'worlds' have subsequently been identified, in addition to gender and children, such as those focusing on masculinity (e.g. Gilchrist 2009a), the disabled and their carers (e.g. Vlok et al. 2017) queer theory (e.g. Alberti 2013) and the marginalised (e.g. Murphy 2008).

Although most of these groups were once all 'marginalised', they were never 'marginal' as they were always there, and always part of the community, despite the perceptions of dominant groups, both in antiquity and in pre-twenty-first century academia (Gowland 2002: 9). One out-group, however, remains poorly examined: that of the elderly (Appleby 2010). Although current attitudes (Appleby 2010; Gowland 2002) also contribute to the lack of research in this space, the difficulty of identifying the elderly individual has been a prominent road-block.

The invisibility of the archaeological elderly is hampered by taphonomic issues, biases in skeletal ageing methods, directional errors in age distributions such as attraction to the middle, substantive differences in rates of degeneration between individuals within the same population, limitations in current offerings of ancestry-specific age estimation guidelines and, related to the latter, sometimes inappropriate reference populations (Boddington 1987; Buckberry 2015); this is further discussed in Chapter Four. To illustrate, using one confounding factor, it is known that age has its effect on the morphology of the cranium. For instance, male crania can take on the appearance of relative gracility, while female crania can appear relatively more masculine, with advanced age. These factors serve to emphasise the fluidity of features linked to sex, gender and ancestry and may also contribute to the distortion of the demographic profiles of cemetery populations (Gowland 2002); an example of the results of biases such as these can be seen in Chapter Seven.

Whether visible or invisible today, it is obvious that children, women, the elderly and other categorisations of humans familiar today have always existed; however, such aspects of identity, while founded on biological characteristics, are also constructed by society (Gowland 2002: 9). These culturally specific aspects of social identity are thus not essential, and divisions and stages like masculine, feminine, infancy, childhood and elder may or may not have existed as defined entities in past societies. However, the biological aspects that make up these differing identities did exist in the past just as they exist today, and seeking to render them visible can only enhance our understanding of past societies. Chapter six examines the effect of sex on the elderly Anglo-Saxon identity. The experience of these categorisations is also dependent on other factors, including ethnicity, health, personality or status (Gowland 2002: 22; Keith 1980: 341), and rather than merely recognising and trying to overcome the complexity of these factors, we need to engage with these complex processes (Appleby 2017: 3).

Appleby (2017) sees four categories of these complex ageing processes centred in the body: changes in appearance, function, disease and skill. Most visible body changes, whether apparent on the surface of the body or through action or movement, are not visible on the skeleton, but sometimes inferences can be made regarding aspects like posture or gait (Appleby 2017: 7). Functional decline can be evinced in the musculo-skeletal system, the senses, cognitive function and the immune system (Appleby 2017: 7). While many musculo-skeletal changes are visible in archaeological contexts, as are some related to the function of the immune system, others like cognitive impairment, blindness, and hearing loss are not (Appleby 2017-9). Some ageing related diseases have been identified in archaeological contexts, although culture affects the recognition and meaning of these conditions (Lock 1993: 146). Changes in skill may be discerned through the material culture related to the skill, and those changes may be a decline or may be evidence of the apex attainable by many years of experience (Appleby 2017: 14).

These ageing processes are central to Appleby's (2010: 150; 2017) thesis, that to manage the invisibility of old age in the past, rather than more accurate determinations of chronological age, a greater understanding of the physical status of the body in conjunction with social understandings of that status and meaning is needed. She suggests that focusing on new methodological methods for ageing elderly skeletons lacks in 'an adequate theorisation of what it *means* to grow old'; as a result, age (presumably chronological age) is placed on bodies without meaning 'except as a form of biological calculator' (Appleby 2010: 150). It is reasonable, as she asserts, to take account of the physical body and social ways of understanding that physicality (Appleby 2010: 150), but without some sort of comprehensible age mapped onto that physical body, then understanding the physical status of old age is limited by the invisibility of those who have reached that status.

This is not to say that we should not recognise that other spheres of life, especially social life, can affect the determination of old age in a past where calendar age may have had no meaning at all. Concepts, like generation, birth order, marital and/or reproductive status, health and ability, as well as physical appearance and social roles can help determine age identity (Appleby 2010: 150; Kaufman and Elder 2002; Holy 1990; Keith 1980). Nonetheless, some age status markers are physical, for instance, the later female life cycle may arrive with the onset of menopause, differentiating it from the male continuum, but this may not be visible in archaeological contexts. Further, markers demonstrating age grades are rarely skeletal but sometimes may be marked with material culture or other physical signal (Appleby 2010: 154; Gilchrist 1999: 87), but a wider examination of a cemetery or cemeteries is usually necessary to link material culture to a particular status. Nonetheless, whether these realities (female menopause versus male continuum) have a major effect on the importance of gender on ageing, or are irrelevant in a particular culture, an individual's social identity changes as they pass through life's stages (Appleby 2010: 155).

Nevertheless, it appears impossible to gain such social understandings of chronological or biological age without recourse to the body, at least in the beginning, even if it is as a 'form of biological calculator' (Appleby 2010: 150).

Although new methods of estimating age at death in skeletal material, such as the one suggested later in this thesis, or those put forward recently by Falys and Prangle (2015) or Brennaman and colleagues (2017), use biological factors to produce a chronological age, one that may be imprecise and inaccurate (Appleby 2010: 147), it does provide a starting point. The difficulty arises, Appleby (2010: 147) believes, because social constructions of old age categories may not be dependent on chronological or calendar age in the way that we believe. This is true; the relationships between chronological, calendar, social and biological age are complex and do not form a one to one relationship (Appleby 2010: 147; Keith 1980: 341), but to be able to attain at least an estimate of chronological age through skeletal material and thus more realistically a biological age, must advance our ability to explore more closely and discuss early societies and cultures.

Acceptance of this idea provides a starting point. While the proposed method for identifying the invisible elderly is outlined in Chapter 4, consideration of cemetery assemblages, age effects on skeletal material and the diversity of ancient populations needs to be kept in mind. A burial assemblage, although consisting of a large quantity of biological material, is a cultural product; the culture that used the burial ground chose who to bury there, and how they should be buried (Waldron 1994a: 12). Culture constructed the assemblage, but the construction was constrained by the genetics and biology of both the individuals who did the constructing and those who became elements of that construction. Therefore, the burial ground and those in it are representative of the biology and the culture of those who used and created it.

A burial ground is also a place of liminality and transition, a movement from one stage to another; in the lived existence, transition through life's stages is rarely a clear cut step from one stage to the next, even if ritual makes it so, but death does provide a definitive, unambiguous boundary that is impossible to fudge or blur (Gowland 2002: 60; van Gennep 1960). The idea of an orderly transition process is, however, a useful concept which allows the viewers a simplified, formulaic and thus recognisable image. Within the concept of transition, various themes can be explored:

continuity/discontinuity, native/newcomer, pagan/Christian, young/old may be accessible through material culture (Gowland 2002: 61).

When attempting to discern the old and the not so old, there are some avenues open. Buckberry (2015) provides a review of ageing methods, their 'fashions' in various parts of the world, finding a lack of consistency in methods used, and the understanding of their shortcomings; she calls for more research to create unbiased, combined approaches. Since this paper, more methodologies have been published.

Falys and Prangle (2015) proposed a method of estimating the age of mature adults using the sternal end of the clavicle. Using three morphological features of the joint (surface topography, porosity and osteophyte formation) they developed an ordinal scoring method for each trait, which is then summed to form a composite score. An advantage, they say, of using the clavicle end, is its late fusion, not completing until the late twenties or early thirties (Falys and Prangle 2015: 204). The method should be used for individuals already aged over forty years, which I don't see as a shortcoming, but the 95% confidence age ranges are very wide – 47 years for stage II – except for the final stage (V) which is 85-89 years.

The methodology put forward by Brennaman and colleagues (2017), using osteoarthritis of the shoulder and a Bayesian approach, also provides age estimates beyond the catch-all 50+ age cohort. They use the shoulder (more particularly the glenohumeral and acromioclavicular joints) as characteristic osteoarthritic changes usually occur around decade six, with prevalence increasing as age increases (Brennaman et al. 2017: 2). This appears to be a useful method for ageing older individuals, but as they studied modern individuals of known age, the relevance to archaeological samples is unknown, as old individuals in antiquity may have put more pressure on shoulders due to higher likelihood of hard physical work. However, if used for seriation, it is likely to be useful.

The method I propose in Chapter Four is based on sample seriation using tooth wear. Rapid tooth wear of past populations, due to the nature of food (less processed, more

likely to contain inclusions) means that there is a relatively strong correlation between age and attrition (Gowland 2002: 113; Tomenchuk and Mayhall 1979). Due to differences in diet and bites, it is not possible to use modern population standards for estimating age at death from archaeological peoples (Gowland 2002: 115); however, as tooth wear is unidirectional and continuous, it is ideal for seriating a single community within a particular time frame without major societal change from youngest to oldest (Buckberry 2015: 329). Although there may be sexually dimorphic diet and chewing patterns, as well as variation within cohorts (Gowland 2002: 116; Tomenchuk and Mayhall 1979: 76), this remains a useful measure, especially if there is recognition of such caveats and methods to recognise biases. Other possible confounding factors include loss of occlusal partners, malocclusion, and using teeth for purposes other than chewing food (Gowland 2002: 118). While considering these confounding factors, the method outlined in Chapter Four to identify the invisible elderly uses tooth wear as its starting point.

We have now reached a point that allows a picture drawn from the burial assemblage to better reflect the reality of the past. Such a picture is a mosaic of snapshots taken at single moments in time. The lifeways and death rituals inferred from these snapshots can be put together to create a distinctive if somewhat blurry whole. This is burial archaeology;

Archaeology and death

I am about to take my last voyage, a great leap in the dark.

(THOMAS HOBBES 1679)

Mortuary archaeology is the study of the dead in order to acquire knowledge about life. Almost synonymous with archaeology itself, the practice allows people a glimpse of the lives of long dead individuals, mediated through the lenses of ritual and time (Parker Pearson 1999: 3; Fahlander and Oestigaard 2008: 1). The body in the grave

may appear to be the primary focus of an archaeological investigation, and much can be discovered through skeletal analysis, but study of monumental tombs, cemeteries, barrows, graves, funerary urns, charnel pits and any other context where the dead are found is undertaken to inform not only about the moment of death and the individual buried, but also about the lived experience of people of the past.

We are able to examine this totality because the dead do not bury themselves (Parker Pearson 1999: 3). A person may leave instructions for their disposal after death, but it is up to the living to decide whether they will follow such instructions or make their own arrangements. Their decision will be based on what they feel is appropriate for that person, but will also be bounded by religious, cultural, social or personal traditions as well as their relationship with the deceased and emotions like grief, anger or relief. Consequently, the ceremony, to a greater or lesser extent, will reflect the society of the survivors. As the ritual is followed, the body of the deceased travels physically and/or metaphorically from the land of the living to the world of the dead while life continues for the survivors until they too make that final journey. The passage of time and the mechanisms of taphonomy modify the evidence of the grave, removing, adding, displacing objects, leaving the mortuary archaeologist little more than a few scraps of bone, metal, decay and stains sitting in stratigraphic layers from which to resurrect, as it were, these past lives.

Nonetheless, often it is the spectacular monumental burials, with well-preserved remains and exceptional grave goods, which are the focus in illustrating the extraordinary lives of the powerful few. Although these elite, powerful burials may allow information about the more numerous common people to trickle down (by suggesting their lowly status in a highly stratified society) the burials of ordinary people with few associated goods relate stories about the lives of these people more directly (Stutz 2016: 18). In addition, the dead individual is not always the primary focus of burial archaeology, rather they may simply provide an opportunity to examine architecture and pottery, feature and context (Stutz 2016: 21). This lack is remedied to some extent in Chapter Seven where two somewhat ordinary individuals tell a story of their lives in their community.

Such stories tell us that burial archaeology is not only concerned with discovery and description but also involves interpretation, which draws on not only the disposition of the grave but also the knowledge, experience and beliefs of the archaeologist as she/he attempts to make sense of the evidence (Parker Pearson 1999: 20). There is a materiality to the disposal of the dead, a human response to an event we all must face eventually, a response which goes beyond the problem of disposing of a decaying corpse (Fahlander and Oestigaard 2008: 5). The archaeologist must look beyond this practical necessity, but only as far as the evidence allows. The questions he/she asks will mould the interpretation.

It is a reality of life that ageing inevitably ends in death; the journey on the way to that end is often ceremonially marked as an individual moves from one life stage to another with the final ritual for any individual being the funeral (Welinder 2001: 71-72; van Gennep 1960). The burial ritual is also a theatre where the participants – the survivors as well as the deceased – undergo change – social change, cosmological change, identity change (Williams and Sayer 2009: 3). Material culture is often central in this change – objects are receptacles of memory and individuality and so aid in the transmission of changes in status and identity; they fix those changes in the minds of the players as well as the audience (Williams and Sayer 2009: 2). In the funeral ritual and through the chosen material culture, a son or daughter becomes a household head, a wife becomes a widow, a father becomes childless; the world moves on.

The funeral ritual and its associated material culture were the focus of Devlin (2007) who used memory theory to understand the process of remembering the dead in Anglo-Saxon England. The concept of memory in social sciences like archaeology and history has been used in different ways (see, for example, review by Olick and Robbins 1998) but definitions and directions differ throughout disciplines (Devlin 2007: 1). Memory, in a non-literate world, was an essential part of everyday life and contemporary technologies. As outlined by Jones (2003), material culture, whether in the forms of monuments, technologies or other items, works through memory and is more than a storage device as it becomes part of life itself. Four Anglo-Saxon

cemeteries, Spong Hill (Norfolk), Edix Hill (Cambridgeshire), Apple Down (Sussex) and Rivenhall 1 (Essex) were examined by Devlin (2007). The objects and the landscape both provided technologies of memory to deal with the loss of a family member and as tools to create lasting memories, to deal with grief, to idealise the dead and incorporate them into the collective community memory.

Using data from these cemeteries, Devlin (2007: 24) sees funerary dress as one technology of memory. She notes that clothing is an important signifier of identity in life: it is worn on the body, is deliberately chosen to be a part of the 'projected' person and is also subject to cultural associations. It can indicate social group, age cohort, gender and even family identity (Devlin 2004: 24-25). In the Early Anglo-Saxon funeral context, the deceased is dressed for burial, and this allows people to engage with their memories of the deceased; 'dress' is defined by Devlin in a wide sense and refers to any objects or items worn or carried, thus presenting a memorable image of the wearer (Devlin 2007: 24). This brings shields, spears and swords into the definition alongside brooches, beads and items suspended from the waist (Devlin 2007: 24).

Devlin also examines place as an aspect of life. Place provides a profound memory aid, linking relationships and people to the remembered past, and is also used in both the construction and/or reconstruction of that past (Devlin 2007: 49). This is highlighted by Williams (1998) who notes that ancient structures, like barrows, were often employed as the focus of cemeteries and were part of the negotiation and construction of identity, social structure and origin myths. An example can be found in Mill Hill, Deal, Kent, examined in this thesis, which is arranged around a Bronze Age ditch and probable barrow (Parfitt and Brugmann 1997). Williams (1998) also notes that single graves can be used in this way; in the cemetery of Great Chesterford, Essex (Evison 1994), some of the most high status graves are focused on and around a quincunx of Roman cremations; Evison also theorised a row of Roman tumuli, due to the groupings and orientations of graves.

The burial ritual is also a theatre of emotions. We should not impose our own Western emotional experiences on the past, but emotion is an essential part of our human make-up and a necessary tool in our ability to survive (Norman 2004: 10-11; Williams 2007a: 4). Much of human behaviour is subconscious, and much subconscious judgment or *affect* ('the general term for the judgmental system' (Norman 2004: 11)) is emotion. Emotion allows us to make immediate decisions about the world as we see it, and is essential for survival in dangerous times, but it also affects culture (Norman 2004). Culture, including material culture, in turn has a large effect on our emotional make-up, as do experience and education. At a visceral, emotional level, people are the same all over the world, and presumably throughout time (Norman 2004: 11). The question, as it relates to mortuary archaeology, is: do the objects in the grave echo the emotional attachment of the deceased or the burying party?

As it is usually impossible to identify specific emotions evinced by a funeral ritual in the past, Williams (2007a) examines the roles of technologies and material culture in the negotiation of emotive force in funerary practices. He identifies fear engendered by public execution and the subsequent burial of the criminals, and also suggests that the deliberate breaking of spears placed in weaponed burial is a redirection of feeling. Williams (2007a) sees the burial ritual not as a static tableau but as a process involving both display and covering up, remembering and forgetting, the actions of the mourners transforming both the dead and the living and providing evidence of the emotive force of the event. The particular direction this tableau process takes, although put together by the survivors, has been initiated by the person and personality of the dead individual.

It can be seen that burial archaeology is not the same as the archaeology of death: one infers the life or lives of those buried, while the other examines the realm of death including ritual, religion, the body and the afterlife (Stutz 2016: 14). To fully explore the subject, the archaeology of death and burial needs to utilise bioarchaeology as well as the social sciences and humanities (Stutz 2016: 14-15). While the grave provides information on the burial and bioarchaeology yields

answers to questions about the individual in the grave, further inquiry and use of both disciplines can allow more detailed questions about power, identity, ritual and culture to be asked (Stutz 2016: 17). While lab based scientific data may appear to some to be too objective and rigid and unable to be nuanced and theorised in one direction or another, all data, including scientific data has its part to play in making inferences about social identities, culture, population mobility and individual and community histories (Stutz 2016: 23). This should be done in the context of maintaining a focus on death, burial and the dead individual, and closing the gap between science and the humanities in archaeology (Stutz 2016: 24-25).

The nature of the burial will be influenced by the dead individual, whatever their status. Like other social categories of children, women, warriors or elites, the elderly are a diverse cohort (Gowland 2002: 24). The study of any of these categories in a cemetery context, including the elderly, can be approached through age grades, where members of a particular age grade (e.g. infants, young adults) are neatly boxed into a unit, and compared through various aspects of their social identity evidenced by material culture, (for Anglo-Saxon examples see Crawford 1991; Stoodley 2000). This does depend on the idea that the people under examination recognised such cohorts; as noted earlier our concepts of child or elder are largely cultural and not essential. In addition, in an archaeological study, there is almost no way to be certain that people who died at the same age socialised with, knew or were even alive at the same time as each other.

A more fluid approach is examination through the life course, seeing a life as a series of related processes (Gowland 2002: 25; Roksandic and Armstrong 2011; Bogin and Smith 1996). While a society may or may not have specific boundaries related to age or social processes, age and age identity are written on the body and both visible and felt. As such, they are likely to influence and be influenced by societal constructs, social hierarchies, and other identities like sex, gender, occupation and class; a life course approach is an attempt to view an individual, their biology and biography within their society (Gowland 2002: 26). While infant, childhood and juvenile categories (as outlined by Roksandic and Armstrong 2011: 341) are recognised in life

through tooth eruption, older indicators of a new 'stage' in life history, like full epiphyseal fusion of bones, are not so obvious. However, this does not mean that other non-skeletal indicators (like reproductive maturity or onset of senescence) were not noted. In mortuary archaeology, grave goods, or material culture, play an important part in both of these approaches.

Material culture is and was an integral part of our lives, creating, expressing and transforming our personal identity as well as that of the group or community. The meanings held within material culture are not static but are contested and renegotiated throughout, up to and including death and the funeral ritual (Gowland 2002: 77; Lucy 1998: 24). The value of material culture is multiplied when combined with biological data.

Many cemetery reports, while including a section on the human bones, do not engage with this information to any great extent, but instead assess age and sex and list pathologies without consideration of the meaning of this data in life or analysis of its relationship to the individual in the grave (e.g. Hawkes and Grainger 2003). Some reports list pathological or biological aspects, like linear enamel hypoplasia, or evidence of arthritis, as percentages of the whole or in tabular form without linking it to particular burials, thus limiting the use that can be made of this evidence (e.g. Evison 1994). Although osteology can be seen as scientific, objective and factual and cemetery analysis as interpretive, cultural and possibly symbolic, material culture combined with the osteological evidence can increase the information available exponentially (Gowland 2002: 79).

Such a cross-disciplinary approach must be done with care, however. Gowland (2002: 79-82) critiques studies, including that of Härke (1990) and his use of non-metric variants, and those of Stoodley (1999) and Crawford (1999) using skeletal stress indicators to naively infer ethnicity and social status without consideration of the full complexity of skeletal data, including Wood and colleagues' (1992) 'osteological paradox'. Human remains are more than a setting for material culture, and while a body may embrace or reject aspects of identity like age, ethnicity and gender, its

physical being was an essential aspect of its life: if the body no longer functions, life ceases (Gowland 2002: 83-84). While sexing, or more accurately gendering, a body through grave goods rather than skeletal morphology is a practice that should be avoided (as in, e.g., Evison and Hill 1996), it must be recognised that concepts like gender, which are cultural constructs that are often based on biology, may physically impact a body, and also that the body can also affect the cultural construction of that entity.

While normative burials are most informative about the majority of individuals and their respective societies as they demonstrate the most common structures and customs, non-normative burials can also be instructive in exhibiting the existence of special statuses, taboos and punishments as well as possibly little known power structures (Stutz 2016: 18). Prone burial is usually interpreted as a punishment for actions or attitudes in life, or as a counter to fear – that the dead individual may rise from the grave and harm the living, for example (Reynolds 2009; Tsaliki 2008). Although we can almost never discover what behaviour may have called for such punishment (although Hawkes and Wells (1975b) give it an albeit much criticised try, (Reynolds 1988)), if a particular group is overrepresented in a particular burial practice, it may suggest the existence of certain power structures or controls. For example Reynolds (2009) found that females were more likely to be buried prone than males, which in turn may be used to argue that males might use their greater physical power to rule and control the behaviour of females. This is discussed also in Chapter Six.

Another useful approach is field anthropology (as in Duday 2006), a method which combines detailed observation of the skeleton and associated artefacts in order to reconstruct natural processes and human interventions which resulted in the deposit as uncovered (Stutz 2016: 22). Despite being used in France for many years, it is only relatively recently coming into practice in the English speaking world, perhaps due to the language barrier (Willis and Tayles 2009: 547). This practice allows those using the methodology to determine, for example, otherwise elusive information on burial context (whether coffined, wrapped, inhumed directly into the soil) which can, in

turn, provide data about the people and culture that are being examined (Willis and Tayles 2009: 547). An example of this can be seen in Chapter Seven, albeit taken from photographs rather than directly during the excavation.

A body's physical characteristics may be a potent source of identity (Hakenbeck 2009: 65; Härke 2007: 15). Where cranial modification is practiced, the individual body is shaped by culture and society and thus becomes an integral and permanent part of a person's identity and their relationship to a particular group (Hakenbeck 2009: 67). Age is also written on a body: grey hair, wrinkled skin, stooped posture and difficulty in movement may all point to an elderly individual.

Clear examples of burials that demonstrate migration, for example modified skulls within a population that did not share this practice, are rare; more subtle evidence like the measurement of metric and non-metric traits and statistical analyses may be used, as well as isotope studies (Hakenbeck 2009: 78). Such migrations, which can be a result of post-marriage residence customs, appear to have little effect on the identity of the local population, but a potentially significant one on the individual who travelled. For instance, a skull modified in childhood in a distant land remains as a mark of difference, even as an individual is buried in the local way, wearing local dress, and accompanied by local goods of their adopted community (Hakenbeck 2009: 78-79). Both these materialities – skull modification and the funeral ritual – are both largely out of the control of the individual who displays them and thus demonstrate the power of the society over the incoming individual, in many cases, a woman (Hakenbeck 2009: 79).

As males were for many years considered to be the 'default human', critical and theoretical examinations of the condition of masculinity are rare. One exception is Gilchrist (2009b) who notes that the attributes which bring the most prestige and thus power to males in a given society - ethnicity, class, age, profession and of course, masculinity - combine to construct 'hegemonic masculinity' (Gilchrist 2009b: 238; Connell 1995). Men who do not possess the necessary attributes are subordinated and marginalised, to the extent that they may approach the status of femininity

(Gilchrist 2009b: 238; Connell 1995). Material culture, in the form of items of power, weapons for example, presents the male individual as dominant, aggressive and active; this can be seen in the Anglo-Saxon weapon burial rite (Gilchrist 2009b: 238-239). However, not all males are buried with weapons, although most weapons are buried with sexed males, indicating lack of dominance, aggression and action in these 'lesser' men.

As noted earlier, the archaeology of death is used to discover aspects of life. Combining archaeological facets (grave dimensions, grave goods etc) with biological anthropological methods (age, sex, pathology etc) including field anthropology, can uncover cultural, biological and social aspects of life in the past. In this thesis, the focus is trained on particular tiles in the cemetery mosaic which depict the burial archaeology of old age.

Archaeology and age

> *Every woman should marry an archaeologist because she grows increasingly attractive to him as she grows increasingly to resemble a ruin*
>
> *(AGATHA CHRISTIE 1980)*

Archaeological studies specifically focusing on older individuals are rare, but this is beginning to change, especially with the changing demographics in modern society. One example comes from Welinder (2001), who discusses the process of ageing stressed in anthropological studies of elderly individuals with regard to prehistoric cemetery data. Welinder (2001: 167) appears to reflect current attitudes as he lists a schedule of negative aspects of ageing: those over 75 years have lost two thirds of their working capacity, half their physical and reaction ability, half their intellectual capacity, with further losses in eyesight and hearing; in addition, he asserts that most prehistoric women did not survive to go through menopause (Welinder 2001: 167). He also notes that these 'losses' are not visible on skeletal material (Welinder 2001:

167), suggesting that these conclusions, whether accurate or not, appear to be taken from anthropological data rather than examination of the remains of elderly individuals.

Welinder presents a table of burial data from differing periods ranging from the Mesolithic to the 18th century, with numbers of elderly males (93) slightly more than those of elderly women (91) (Welinder 2001: 167-168). While he describes his dataset as 'haphazard' (Welinder 2001: 165), he suggests that changes in data, which point towards a substantial rise in the proportion of elderly from before the Early Middle Ages (3-16%) to the Late Middle Ages and the 18th century (31-35%), reflect a change in cultural attitudes towards the elderly, rather than a change in the number of elderly, even though the proportion of elderly evidently increases (Welinder 2001: 166)..

Despite his approach to interpreting the data, Welinder notes that in many societies, elders enjoy prestige, influence and wealth (Welinder 2001: 171). He also considers power relations: old men control both young men and young women; old women control young women, but the relationship between young men and old women is contradictory and problematic (Welinder 2001: 171). In addition, older individuals who are incapacitated are dependent on those younger, and frequently, disabled old men are more often considered to be of less value than old women; this is possibly related to the physical strength required for masculine tasks. In addition, childless elders without close relatives may find themselves in a precarious situation (Welinder 2001: 171). He notes that this ladder of influence is not universal throughout all societies, and also not within a society (Welinder 2001: 171). While it is refreshing to see power relations discussed with regard to societal elders, and these are generalisations rather than conclusions, Welinder does not consider whether or when the power held by elderly men declines or stops.

His conclusions suggest that in these early times, to live to an extended age and to be buried as an elder was a culturally constructed event, and dependent on gender (Welinder 2001: 168). He notes that to be old is not the same as reaching the end of

a long life span, rather it is to be considered old by others and one's self (Welinder 2001: 175). This then is cultural age, which, while a separate entity to osteological and chronological age is combined with them and social age to create a societal view of an individual of a certain age. Welinder (2001: 175) suggests that 'old age may be studied as the process of growing old', by seriating individuals from youngest to oldest, thus determining who is the oldest, osteologically and thus approximately chronologically. While seriating individuals from youngest to oldest is the basis of the method of identifying the invisible elderly outlined in Chapter Four, this thesis is attempting to understand more than 'the process of growing' old in seeking the social and personal meanings of increasing age.

Archaeologically, Welinder provides a brief analysis of three cemeteries, from the Middle Neolithic, Late Bronze Age and Iron Age, looking at deposition of objects with older individuals (Welinder 2001: 172-175). Largely, his findings suggest that older men receive more objects and older women fewer (Welinder 2001: 172-175). Although the meaning of such deposition is not explored, whether with regard to social status, identity or other aspect of culture, it does appear to echo his thoughts on power relations and social status outlined earlier.

Whether or not old age brings high social status, it does not necessarily translate into economic or physical security or being thought well of by contemporaries (Appleby 2010: 153). Whatever status is attained by an elderly individual, old age is likely to be but one aspect of reaching that standing; other aspects, like knowledge and experience, gender, ethnicity, kinship, class and occupation as well as the personal character of the individual and their relationship with others in their community, may be of greater or lesser importance (Appleby 2010: 152-153). In a non-literate society like early Anglo-Saxon England, the long memories of the elderly were a valuable resource in the maintenance of tradition and histories, and in their knowledge and expertise; the slow rate of cultural and technological change would have minimised knowledge obsolescence, a situation quite different from that today (Appleby 2010: 153). Individual qualities of the elderly individual – charm, knowledge, ability and presence etc – will decide whether they become that valuable resource.

Technology features in Appleby's examination of the Early Bronze Age Franzhausen I cemetery (of the Traisental in Lower Austria). Appleby (2010: 163) notes that the distribution of feminine tools – bronze awls – suggest that female activities continue throughout ageing although feminine costume tends to decline. She also finds some connection between age-related skeletal changes and particular mortuary treatments: of six males with serious and visible pathologies, five were buried with weapons (Appleby 2011: 243). Age-related bodily changes, changes which would identify the individual as elderly to contemporaries, were compatible with somewhat restricted feminine body adornment, while weapons were restricted neither by age nor pathology (Appleby 2011: 244). In a nearby later cemetery, Gemeinlebarn F, male weapon burial became increasingly restricted by age, while age was not materially marked for women (Appleby 2011: 244). These conclusions, identifying as they did aspects of the articulation of old age, health and identity, were brought about through analysis of both osteological indicators of advanced age, including those that would have affected an individual's appearance and movement, alongside the material culture in the grave and the relationship between these entities (Appleby 2011: 244). They tend to confirm that age is but one aspect of identity and that work or work identity, whether using awls or weapons, continues whether status changes or stays the same.

Such relationships are not static. The construction of identity is frequently linked to age, perhaps through economic factors, the ability (or inability) to access power as well as through social relationships, and this status may wax and wane as an individual progresses through their life stages (Jenks 1996: 71 cited by; Gowland 2002: 30). Although old age is only part of his story, Halsall looks at the consequences of growing old for women in Merovingian Metz (Halsall 1996). Although, as Halsall (1996: 5) concedes, the narrative depends on limited and sometimes out of area data, as well as fragmentary written evidence, the results display some similarity to those found in this thesis. He considers that a major shift in women's status occurs when they pass the age of child-bearing, which is about forty; however, given the biases in ageing older individuals, I would suggest that this change is probably closer

to fifty. Fifty is also the age when a woman's youngest child reaches 'legal' majority' (Halsall 1996: 19-20), suggesting a possible cultural reason for a change in status. This change, he believes, reflects a possible reduction in the household role of a woman as she is supplanted by the next generation; this displacement is reflected in the lack of jewellery in graves, which has been passed on to those younger in years (Halsall 1996: 19).

This apparent reduction in status is considered alongside that of ageing males: when their children are grown, also between forty and sixty, they may be buried with less weaponry, but countering that, they are given the most lavish burials (Halsall 1996: 19). He concludes that the deaths of older women (probably widowed, due to differences in age at marriage between the sexes) who had not become established as a wise woman, healer or other respected position, caused few stresses in the community and thus required little funerary display (Halsall 1996-21). Gowland (2002: 302) rightly notes that the idea that the deaths of elderly women caused little stress is a concept related to present society's attitudes; however, the concept of burial archaeology as a method to deal with the damage to the fabric of society caused by a death, although presented differently, is a similar idea to that of a ritual where memories are made and remade (as in Williams 2011: 239).

While the burial ritual may be the result of the social stresses caused by a death, it is surely not the totality. In a set of Roman British cemeteries, Cassington, Queensford Farm, Lankhills and Victoria Road, Gowland (2002: 215) noted that women over 50 years were rarely buried with items of personal adornment, but were more likely to be buried with bone combs beside their heads; the only other group likely to be buried with a comb was children aged 1-3 years. With older females being treated similarly to the under fours, Gowland suggests that these two age groups occupied similar status levels, whereas those between four and 50 who displayed feminine identity appear to be of higher status (Gowland 2002: 302-303). Gowland also notes that such status, as well as gender identity was lived relationally: a female was commemorated by parents in her youth, in marriage by her husband and in old age by her children; thus the identity displayed in the grave may not reflect status per se,

but also echo these changing relationships (Gowland 2002: 304). This aspect of burial is true of all burials: the dead are buried by the living, and the living reflect the status, including age status, of the dead.

Whereas Welinder (2001) provides a general examination of archaeology and age, Halsall (1996) examines older individuals as one part of his general analyses and Gowland (2002) and Appleby (2011) reflect on biological as well as archaeological aspects in ageing, other more narrowly focused approaches have been taken with regard to the elderly. Although chronically under-reported, elder abuse is estimated to affect between two and ten percent of the elderly population today and is likely to have occurred in archaeological populations too (Gowland 2015: 514). Gowland (2015: 517) identifies skeletal signatures of elder abuse, including repetitive fractures at different stages of healing, in the areas of the head, neck and upper extremities, and also suggests that marginal burial treatment could also be indicative. She notes that there is a sex bias in elder abuse today with older women more likely to be the victim, and provides two examples from Roman Britain where older women were both buried non-normatively and exhibited trauma indicative of elder abuse (Gowland 2015, 519-520).

Gowland (2017) continues the theme of elder abuse in the context of the archaeology of care. She presents four examples, one historical (18th century) and three from Roman Britain, all female. While two of these cases had injuries consistent with abuse, including perimortem injuries, two were included largely because of their marginal burials. Although this pair from Watersmeet, Huntingdon, Cambridgeshire, displayed severe osteoarthritis, and one individual had a healed non-united fracture of the ulna, their inclusion in this paper reflected their possible dependency, incapacity and resultant possible status reduction (Gowland 2017: 83-85). While one or both of these individuals may have suffered physical abuse, with one possibly buried alive (Gowland 2017: 85-86), there is also a distinct possibility that they suffered emotional abuse, which leaves no mark on the body, but is still greatly injurious.

Another issue primarily affecting the elderly today is dementia. Karenberg and Forstl (2006) review writings about dementia in the past which demonstrate the degree to which physicians of the Greek and Roman eras recognised the consequences of living to old age, noting that terms and aetiologies were of their time, but still recognisable. They also examine various literary sources from the past which also deal with exigencies of old age (Karenberg and Forstl 2006), but succumb to modern societal preconceptions as they suggest that 'psychopathological manifestations of old age represented a rather marginal problem' due to old age being a 'rare event' (Karenberg and Forstl 2006: 7-8).

On the other hand, Smith and colleagues (2016) reaffirm the presence of older individuals in the past, and attempt to estimate the prevalence of dementia in ancient populations. While the earliest known mentions of a case of possible dementia dates back to the 24th century BC in Egypt (Karenberg and Forstl 2006) and although they conclude that for most of the human past the prevalence of dementia was only a fraction of 1% of the population, the fact that there were enough older people alive and contributing to their societies means that dementia is a condition that humanity has always coped with (Smith et al. 2016).

Conclusion

In this chapter, the meanings and definitions of age, including senescence and a range of physical aspects that ostensibly characterise increasing age, as well as different types of age have been examined. Calendar age is a concept easily understandable today, but may have not been important to past societies, who may have relied on the functional aspects of the ageing body to indicate biological age, and used aspects of that to create social age. Reasons for the common belief that the elderly did not exist in the past – including current attitudes to ageing, as well as the difficulties in ageing older individuals through skeletal means – have also been considered.

The archaeological methods used to examine the meaning of old age have also been discussed. While higher status for the elderly may be related to traditional skills and knowledge, property rights, power both personal and political as well as general approval for carrying out traditional 'grandparent' duties like babysitting (Keith 1980: 340), this is not necessarily always the case. Status may decline with the handover of resources and thus power to those younger, or with loss or lack of children, or deteriorating appearance and strength (Keith 1980: 340). Attractiveness, especially for women, charm, the control of information and resources, or the ability to be useful tend to promote high status and better treatment for the elderly (Keith 1980: 340), and these aspects suggest that attitudes to the aged and ageing appear to be gendered. Elder abuse affects more women today, and possibly did so in the past, while older men may retain and even increase their power and status as they age (Gowland 2015; Halsall 1996; Welinder 2001). It is unlikely that such attitudes are universal, but instead need to be examined and determined using the burial and material culture on a case by case basis.

Evidence also suggests that the ability to achieve a good standing in the community was not a static talent, but changed as societal attitudes changed. For example, in the Middle Ages the Christian God was pictured as a young, handsome man, which may imply that young, strong men wielded the most power in that society, while in the Renaissance he began to be depicted as a dignified but powerful old man (Shahar 1996: 52), possibly suggesting that the aged had by then become more influential. Change also occurs on an individual level, waxing and waning as an individual moves through life, and in burial contexts those who bury a person change with age, as parents bury children, and children or grandchildren may bury the elderly. These varied and general aspects and experiences of old age in the past come from many cultures, times and places. The focus of this thesis is to outline these outcomes in the context of the elderly of Early Anglo-Saxon England.

To begin this journey, *Chapter Two* introduces Early Anglo-Saxon England, its culture, archaeology and people. I will examine the state of play thus far in the archaeologies of age as well as what is known about the status of its senior citizens. I will also

introduce the three cemeteries which are the focus of this thesis and outline the methods used to identify the attitudes to the elderly in this particular time and place.

Chapter 2 Meet the Anglo-Saxons

> What? In riddles?' said Gandalf. 'No! For I was talking aloud to myself. A habit of the old: they choose the wisest person present to speak to; the long explanations needed by the young are wearying.
>
> (TOLKIEN 1954 [1996]: 517)

This chapter introduces Early Anglo-Saxon England, its culture, archaeology and people. I will also examine the current state of research with respect to the archaeologies of age in this period, as well as what is known about the status of its senior citizens. In addition, the three cemeteries which are the focus of this thesis will be introduced: Great Chesterford, Essex; Mill Hill, Deal, Kent; and Worthy Park, Kingsworthy, Hampshire. I will also outline the methods used to identify the attitudes to the elderly in this particular time and place.

Anglo-Saxon England

> It may be asked, What have the Anglo-Saxon invaders left behind them to serve as a basis for archaeological study? The answer is, their cemeteries...
>
> (LEEDS 1913)

Anglo-Saxon England had its beginnings after the end of Roman rule in the early fifth century and endured until the Norman Conquest in 1066 (Hines and Bayliss 2013: 27). This was neither a static nor a homogenous period but instead one of continuous transformation brought about by agents both from within and outside. The later Anglo-Saxon period has been illuminated to a lesser or greater extent by textual sources like charters, wills and laws as well as archaeological data, but due to limited literacy and few contemporary texts in the early period, the reconstruction of Early Anglo-Saxon culture, attitudes and family organisation, relies heavily on archaeology, especially the archaeology of cemeteries (Sayer 2009: 142, 150).

Graves and cemeteries are designated as 'Anglo-Saxon' due to the 'Germanic' material culture which furnished them. The term 'Anglo-Saxon' is a historic concept, used within the period itself and this designation generally relates neither to Germans, nor to Angles, Saxons, Jutes, Franks nor any ethnic group, but rather to the time and place (Hines and Bayliss 2013: 27). The change in material culture which occurred at this time suggests a change in the social identity of those buried people, but the processes bringing about this transition are complex, hidden and subject to debate (Gowland 2002: 63). This thesis is not concerned with the origins, ethnicities and means of this change, but instead examines the individuals buried in the cemeteries, the material culture they took to their graves and the experiences of those who lived to a grand old age. Here, the term 'Anglo-Saxon' is used to delineate the period, the culture and the geographical area, but not the ethnicity of those buried in these three cemeteries.

This thesis is concerned with Early Anglo-Saxon England, sometimes called the Migration period, specifically the period dating from the late fifth century to the early seventh century. This is the time before Christianity starts to become the dominant religion, a process said to begin after the arrival of Augustine in AD 597 (Pluskowski 2011: 765; Welch 2011-267). This arrival and conversion did not bring about a sudden change in societal religion, attitudes and culture but instead heralded the beginning of a liminal phase where the move to Christianity had its inception. Furthermore, during this time other transformations were occurring – burial practices were changing, costume and fittings were becoming standardised across Anglo-Saxon England, and the initial stages of the movement from a relatively unstratified society through princely expansions to the Anglo-Saxon kingdoms were under way (Welch 2011: 266-269). This liminal period has been labelled, albeit somewhat unsatisfactorily, as the Final Phase or Conversion period, and dates in the earliest cases from the end of the sixth century, until its ultimate disappearance in the early eighth century (Welch 2011: 269; Hines and Bayliss 2013). Although some graves from two of the cemeteries examined here come from this Final Phase, the greater part of this thesis is concerned with the remains of individuals dating to the Early Anglo-Saxon period.

Geographically, Anglo-Saxon England is confined to a large triangular swathe of land in the south and east of the country. Although regional differences and temporal changes occur throughout the width and breadth of this territory, there is also considerable similarity: Anglo-Saxon cemeteries are usually identified by the presence of burials of females wearing brooches, beads and other dress accessories, and males interred with weapons, usually a spear and a shield (Stoodley 1999). Other items like knives, buckles, pins and pots can be found with both sexes and in all age groups (Stoodley 1999). Although cremation burials are also found in this period, a practice which largely disappeared with the onset of the Final Phase, this thesis examines inhumation burials, where preservation has allowed age and sex to be discerned with some degree of accuracy (Welch 2011: 267).

Anglo-Saxon society was a social network consisting of extended households, usually based on a free family unit (Herlihy 1985: 48; Sherlock and Welch 1992: 102; Stoodley 2000: 467). These are typically considered to be farmsteads, operating at a subsistence level, with perhaps an extended family plus servants, slaves and maybe others, in settlements ranging from small, consisting of a few buildings to those the size of a small village, with the whole community making use of a single cemetery (Lucy 2000: 2-3). Anglo-Saxon inhumation cemeteries are probably situated close to their settlements, although many settlements have not been located, largely due to their organic (wood etc) construction (Gowland 2002: 70). Evidence from such settlements suggests that individuals worked together side by side as a community, with few social distinctions and without special areas for particular classes of people, like children, adults or the elderly (Härke 1997: 126). There is little evidence for social differentiation in these settlements, but because only small numbers of settlements have been excavated and published, some evidence for hierarchical stratification has probably missed or masked. Cemetery evidence, however, does indicate status distinctions (Ulmschneider 2011: 159) which are largely identified by way of grave goods.

Anglo-Saxon grave goods have been useful for more reasons than inferring status. Dating of the early Anglo-Saxon period is largely based on grave good typologies and their parallels to continental goods and historical accounts (Dickinson 1977: 24). This approach was pioneered by Leeds (e.g. 1936) who produced major studies on brooches, and continued later by Myres (e.g. 1977) who categorised pottery. This traditional artefact categorisation and linking to continental parallels was continued for most of the twentieth century by practitioners like Evison, who provided detailed analyses of artefacts like shield bosses, brooches, buckles, beakers and drinking horns among other studies. Evison was also a tireless excavator of cemeteries, uncovering Great Chesterford, Holborough, Buckland Dover, Alton and Beckford (Evison 1955; 1956; 1963; 1968; 1969; 1972; 1977; 1987; 1988; 1994; Evison and Hill 1996; Parfitt 1995).

Dating through typologies and parallels is not always wholly satisfactory, but other options are not always available. Radiocarbon dating is a seldom used option in this period, not only because of the expense but also because the calibration curve for the period covering the Migration period is somewhat flat, meaning that dates found will have large error margins. To illustrate, Grave 29 at Mill Hill, Deal, was carbon dated in order to determine whether it belonged to the Anglo-Saxon period or one of the earlier uses of the hill, with the resulting date coming in at cal. AD 335-535 (2 sigma) (BM 2867), a span of 200 years; in comparison, the nearby grave 33 was dated through grave goods to the period AD 500-530/40 (Parfitt and Brugmann 1997: 21).

To try to find more solid groundings for typologically derived dates, Hines and Bayliss (2013) have used radiocarbon dating combined with correspondence analysis and Bayesian statistical probability to provide a more accurate chronology for grave goods attributed to the Anglo-Saxon Final Phase. They examined a large quantity of goods, their associated graves, and radiocarbon dates to construct a new chronological arrangement for the period. They were unable to align masculine and feminine graves into the one chronology, and so have two parallel structures. They have labelled these AS-FB to AS-FE for feminine graves with dates ranging from AD 510 to AD 680; and for masculine graves, AS-MB to AS-MF (AD 525 to AD 583) (Hines

and Bayliss 2013: 460-461). (It is assumed that AS indicates Anglo-Saxon, with M and F indicating masculine and feminine respectively.) Some graves from the latest phases at Mill Hill, Deal, Kent were used in this study, with the results not changing the dating to any significant extent. Graves 94 and 95 were dated to the AS-FB period, which starts between cal AD 510-45 and concludes AD 555-585 (95% probability) (Hines and Bayliss 2013: 460). Parfitt and Brugmann dated these graves to Kentish Phase IV, AD 560/170 – 580/90 (Parfitt and Brugmann 1997: 100, 107).

As can be seen above, Hines and Bayliss (2013) began both masculine and feminine chronological categories with 'B' rather than 'A', leaving space for studies on earlier cemeteries and their artefact types, like that of Hills and Lucy (2013). They published a study on the large cremation cemetery at Spong Hill, also using correspondence analysis to analyse the vast catalogue. Instead of radiocarbon dates, they refined their groupings using the stamps, style groups and other decorative motifs on the pottery urns, integrating this with similar analyses from the inhumation burials. Along with chronological and social patterning within the burial ground, the cemetery could then be situated in the local context and compared with other cemeteries, both British and continental.

These new chronological frameworks of Hines and Bayliss (2013) and Hills and Lucy (2013) give artefactual dates a more solid grounding than is possible through continental parallels, although their range of typologies is limited by the regionality and chronologies of some items. Such studies are not only valuable in their own right, but also pave the way for further examination of other types, and thus a firmer foundation on which to base interpretation.

Approaches to Anglo-Saxon cemetery archaeology

Being the richest man in the cemetery doesn't matter to me

(Steve Jobs 1993)

Early approaches to Anglo-Saxon cemetery analysis largely focused on grave good typologies and dating. As noted above, Evison excavated and published on several cemeteries, many of which have sections on the human bones (e.g. Waldron 1994b), textiles (e.g. Crowfoot 1994), pottery petrology (e.g. Williams 1994), analysis of beads (e.g. Heyworth 1994) by specialists in those fields (above examples from Evison 1994). As also noted above, Evison wrote many stand-alone papers on many types of grave goods, discussing types, comparing them to other examples both here and on the continent, noting associated grave goods and considering the distribution of the artefacts before arriving at a possible dating for the item (see for example, Evison (1963) on sugar-loaf shield bosses). Although this type of work is one step removed from the individual in the graves, it is valuable, especially for dating, but examination of artefacts can provide stories other than those of dates.

Meaney (1981) examined amulets and curing stones, items related to the cosmology of the Anglo-Saxon people. For example, she considers a group of individuals she calls 'cunning women' who were buried in well-furnished graves with bags holding amulets and/or small non-functional items which were possibly used for purposes of magic, divination or healing (Meaney 1981: 249-262; Reynolds 2009: 74). An example of one of these women is described by Dickinson (1993: 45-50) from Grave HB1 at Bidford-on-Avon. The young adult female was buried with brooches, glass and amber beads, a pin, an unusual scalpel-like knife and a bag group, as well as set of twelve miniature bucket pendants, associated with what appears to be leather, above a convex disc pendant. Dickinson (1993: 53) interprets this collection of items as furnishing the grave of someone with special powers. This particular interpretation does not rest only on the bag group, but also on the special knife and the 'badge-like bib' suggested by the bucket pendants, bolstering Meaney's 'cunning women'

hypothesis. Studies like this provide insight into the beliefs and behaviours of individuals, and a rare glimpse into their world.

Another examination of Anglo-Saxon behaviour and mind-sets comes from Härke (1990) in his examination of warrior graves. Härke (1990: 30-32) compares the incidence of graves with weaponry alongside the dates of known battles, finding little congruency with the weapon burial rite peaking at times of few battles. He also notes that while most weapons belonged to the individual (almost always male) they were buried with, many were unable to fight. For instance, weapons are not only found with strong men of fighting age, but also with the very young, the disabled, the infirm and the old; also, weapon burials do not correlate with battle wounds (Härke 1990: 35-37). In addition, Härke (1990: 39) found that individuals buried with weapons were on average 2-5 cm taller than those without weapons in their graves, suggesting that this is because they were of Germanic stock, rather than British. He concludes that burial with weapons is a symbolic act and the ritual demonstrates not the burial of a fighting man, but expression of Anglo-Saxon warrior status (Härke 1990: 43). Although this paper has been rightly critiqued for misuse of osteological data, not taking error ranges into account for the height differential (Trotter and Gleser 1952) and not considering other reasons for that differential (Lucy 2000: 75; Gowland 2002: 79-82; Tyrrell 2000a; Tyrrell 2000b), it has, however, highlighted important symbolic aspects of the burial rite. While examining the deposition of particular classes of grave goods (in this case, weapons), it also grapples with the meaning of their deposition beyond the obvious, and thus provides another glimpse into the mind-set of Early Anglo-Saxon individuals and societies.

More recently, Williams (2007b) also examined artefacts contextually for the purposes of seeking social structure, ideology or symbolism, in this case toilet implements. Tweezers are the most common toilet implement found in graves, but ear scoops, picks, brushes and various rods or scrapers are also included in this designation (Williams 2007b: 66-68). Most of these objects appear to be functional, although actual function is often difficult to fully infer (Williams 2007b: 69). Williams (2007b: 72) notes that while such grooming items are relatively rare as grave goods,

they are almost exclusively buried with adults, and most commonly with individuals over forty years of age; (however, it can be seen in Chapter Five that the ability to identify the invisible elderly further narrows this down, with the over 65s being the most likely recipients of these items in their graves).

Williams (2007b: 83, 87) sees these implements as artefacts connected to the body and its appearance, noting that they are used for altering this appearance; therefore toilet implements are tools of transition. As material culture in graves is related to memory in life and death, tweezers and other toilet items are necessary for the representation of an idealised image of the individual in the grave, and the subsequent regeneration of both the living and the dead, 'transforming body and soul' (Williams 2007b: 89). This paper emphasises the importance of symbolism in either the preservation or destruction of memory in the burial ritual, and the role of grave goods as symbolic agents rather than merely the property of the deceased. While symbolism and the burial tableau are designed to enhance memory and maintain status, grave goods can also be used to examine the status of particular individuals and cohorts of individuals, especially in relation to changing identities throughout the life cycle.

Archaeology of Age and Identity

Will you still need me, will you still feed me,

When I'm sixty four?

(LENNON AND MCCARTNEY 1967)

As an individual's identity changes as they move through the life cycle - daughter, wife, mother, grandmother - so does their relative status within their community, and also the identity of those who bury them. These changes in status are often, but not always, marked by rites of transition, and are also often marked by changes in material culture. These aspects of life provide many opportunities for archaeologists

to examine the relationships between material culture and identity, although this is not a straightforward process.

Sofaer notes that gender is fluid, due to the biological processes of human development and the cultural aspects of the skeleton's life, but that biological anthropologists and archaeologists struggle to grapple with it (Sofaer 2006: 156). She is concerned about analyses where the sex and gender of a human skeleton are considered to be distinct, as well as those where they are considered inseparable (Sofaer 2006: 156). Sex and gender considered inseparably are critiqued elsewhere in this thesis, in the context of gendered grave goods 'sexing' a skeleton; while acknowledging that neither sex nor gender are bimodal concepts, it is true that the majority of humans fall into the two main categories of male/female and/or feminine/masculine, and that it is likely that people of the distant past, without education in biology or genetics, would perceive most people as fitting within these categories. With regards to the distinct categorisation of sex and gender, Sofaer suggests that without directly observing the interaction between the dead individual and the goods that they were buried with, archaeologists are liable to fall into the trap of 'biological determinism' (Sofaer: 157). This may be a risk, but surely it is better to attempt to examine the lives of people of the past through the remains they have left behind, whether in middens or in graves, than to discard any analysis by placing it in the biological deterministic hard basket.

Such relationships between material culture and the identity of its possessor in a mortuary context are symbolic and potentially an essential element of another symbolic ritual – funerary rites (Pader 1980: 143). Material culture, while having practical applications, also has symbolic purpose. When Pader (1980: 147-148) examined the age and sex distribution of artefacts from the early Anglo-Saxon cemetery at Holywell Row, Mildenhall, Suffolk, she recognised that male-female relationships were interdependent with age identity. The various age identities of the different sexes followed different pathways. For instance, gendered grave goods have different symbolisms: female grave goods are less strictly constrained than those of males, suggesting that in some senses women are treated similarly to minors

(Pader 1980). Although her age relationships were simply those between adult and child rather than differentiation between various adult age identities, Pader (1980) was one of the first to examine the symbolism of material culture with age identity. In this paper and her further study (Pader 1982), where she examines such symbolism in the wider Anglo-Saxon framework, she can be seen in the process of throwing off the shackles of processualism (Hodder 1985: 14).

While processually citing 'rules' of domain and social structure, Crawford (1991: 18), when asking when Anglo-Saxon children count, she notes that children's place in the community is anarchic, existing beyond adult law and convention thus providing a postprocessual element to her analysis. She notes children's anarchic ability to bypass these normal rules and responsibilities is due to their dependence on adults, with the result that normal indicators of social identity or status which are applied successfully to adult graves cannot be relied upon to analyse dead children (Crawford 1991: 18). In addition, in Anglo-Saxon archaeology, infants and to a lesser extent children, are a largely invisible category, with few infants in Anglo-Saxon cemeteries (Great Chesterford is a notable exception). The reasons for this lack are explored, with shallow burial, taphonomy on young bones or little energy expenditure on a low status cohort being considered. In addition, Crawford (1991) highlights diverse definitions of terms like 'juvenile' or 'infant' found in different reports, which makes comparisons between cemeteries problematic (Crawford 1991: 20-21). Despite the above problems, Crawford (1991), like Stoodley (2000), also seeks age thresholds, using both Anglo-Saxon texts and burial evidence, with one of her findings being that individuals that we would regard as children are granted adult status at about the age of ten years.

While Crawford (1991) does not fall into this trap, Lucy (1997) deplores early attitudes to sex, gender and grave goods in Anglo-Saxon burial archaeology. She notes that the traditional and exclusive linking of particular grave goods (e.g. jewellery with females and weaponry with males) can be traced to nineteenth century antiquarianism and is unsuitable for twentieth (or twenty-first) century archaeology (Lucy 1997: 155). Exclusive linking of sex, or more accurately gender,

with particular grave goods also risks circularity in argument. Even though skeletal sexing suggests that these traditional linkages are true in most cases, it is more fruitful to examine burials and associated goods with relation to other aspects of an individual's lived experience like social factors, kinship, lived experience and even perhaps age (Lucy 1997: 163-4).

Age and its representation in the Early Anglo-Saxon burial rite was examined by Stoodley (2000). His study used a sample of 1,230 undisturbed aged burials from across Anglo-Saxon England, examining relationships between grave goods and various age categories ranging from infants (0-1 years) to the 'mature' (over 40 years) (Stoodley 2000). He attempted to find thresholds in the construction of life cycles, finding the first change in the burial rite at about the 2-3 year age mark (Stoodley 2000: 459). He found other age thresholds, but noted that the construction of the lifecycle was a two-tiered system, differentiated by gender as well as age, and that an individual could have two separate identities (Stoodley 2000: 466). While this study provides many insights into Anglo-Saxon lives and lifecycles, its major shortcoming is the oldest age category of 40+ years. Although this category is out of Stoodley's (2000) control, it does contribute to the invisibility of elderly Anglo-Saxons.

Like Crawford (1991); Gowland (2002) notes that age identity of the past is not the same as we see today, and that failing to recognise this means that interpretation is likely to be flawed. Gowland's (2002) thesis examines age as an aspect of social identity in fourth to sixth century England, examining late Roman and early Anglo-Saxon cemeteries. Age is not the sole signifier of identity, and therefore can and should be examined alongside other identities like gender, ethnicity and class, as these entities both affect each other and are affected by them. Age and gender are both related to biology to a greater or lesser extent, and are inextricably linked as an individual moves through the life course (e.g. Roksandic and Armstrong 2011; Bogin and Smith 1996). Thus, it is also essential to examine both osteological and archaeological evidence in concert in order to more fully examine identity in the past.

Biological and physical fundamentals interact with social and political constructs to create a society and the individuals within that society.

While not having an obvious focus on osteology or age identity, Martin (2012) gets close to the early Anglo-Saxons and their behaviour when he examines the repair, customisation and re-use of brooches largely found in Anglo-Saxon grave contexts. He contends that brooches were the inalienable possession of their owner and must therefore be repaired when broken and not passed on to someone else on death. There is justice in this conclusion, but it does not take into account the fact that the number of brooches buried with individuals peaks during young adulthood, then declines with age which suggests perhaps that a woman gave away brooches during her lifetime, or even on death, perhaps to daughters or daughters in law, but retained some for her burial (see Chapter Five, Cave and Oxenham forthcoming). He also notes that brooches that have lost all decorative and fastening function have still been repaired and found in the 'correct' position, suggesting that it was the particular brooch that was important. This may be so, but it also may be that it was important to wear a brooch as a signal of status or identity, even if broken, no longer decorated, and unable to fasten clothing. Martin's paper (2012) does not discuss unusable brooches found in purses or bags in graves. Indeed, the fact that these brooches were kept, even if not on display, suggests they retained importance to the individual who owned them. An example of this is the elderly woman (over 65 years) buried in Grave 95, Mill Hill, Deal in Kent (Parfitt and Brugmann 1997), who was buried with an unwearable worn and broken quoit brooch; this individual is discussed in more detail in Chapter Seven of this thesis.

Felder (2015) focused more on the archaeological, than the osteological evidence in her study of girdle hangers, where she examined the social dynamics of identity through these articles. Girdle hangers are symbolic objects, probably based on keys, but without apparent use other than as a body adornment and status indicator (Felder 2015:2-3). They are comparatively rare items, almost always found with adult women, and while they have been theorised as reflecting household responsibilities and economic authority (e.g. Hirst 1985: 38-43; Smith 1856: xli), Felder (2015: 4-5)

examines these artefacts as part of the discourse on 'dressing and wearing as a social field of action' (e.g. Martin 2011; 2012). Anglo-Saxon burial sites demonstrate diversity in their socially identifying, gendered material culture across regional, local and household and family constructs. Multiple meanings and multiple identities are displayed in the performance of wearing items, creating links and cementing relationships. Felder (2015: 14) attempts to follow these associations across time and space, finding that while keys were related to economic and household authority, girdle-hangers were associated with specific bags and amulets, linking their wearers with birth and death, pregnancy and conception, death and funerals. Rather than symbols of household management, she sees these items as objects symbolising the power to oversee the disruptive events of birth and death while protecting the wearers (Felder 2015: 14).

Items like girdle-hangers, tweezers and weapons can illuminate aspects of symbolism and identity for their wearers, but such aspects of an individual's identity are specific to the time that they are wearing or carrying the item, even in death. Examining identity through items, as in these cases, highlights the symbolism and meaning of the *item*, it is also possible to examine items with regard to the identity of the *wearer*. This is largely the approach taken in this thesis: examination of the items linked to wearers of a grand old age.

The elderly in Early Anglo-Saxon England

> Considering the alternative, it's not too bad at all.
>
> (MAURICE CHEVALIER 1981, WHEN ASKED ABOUT HIS ADVANCING YEARS).

As noted earlier, the main problem when examining the identity of those who lived to a grand old age is the difficulty of identifying the particular individuals who were elderly. This thesis provides a solution to this problem in cemetery contexts (see Chapter Four), but other authors have attempted to examine the elderly despite the invisibility of many or even most elderly individuals in cemetery series. Most

prominent among these is Crawford (2007b), who considered the social implications, particularly the effects of gender and status, of living to an old age in Anglo-Saxon society. Presumably partly due to the difficulties of identification mentioned above, Crawford (2007b) uses textual sources to a large extent. In a separate paper, Crawford (2007a: 86) accepts that these sources come from the Christian phase of Anglo-Saxon England, but insists that 'social mores and structures remained embedded in later Anglo-Saxon society' and that although many attitudes, beliefs and practices changed with the conversion to Christianity, these written sources contain the closest anthropological parallels available to the pre-Christian period.

These historical sources attest to the survival to old age of named individuals, including 'the priest Egbert' who died at 90, Theodore of Tarsus (87) and Willbrord (81). Abbess Hilda of Whitby who died at 66 and Abbess Leoba (at least 60 when she died) are the only two women given specific ages at death (Crawford 2007b: 54). This discrepancy suggests either that women did not live as long as men did, or that they were less 'notable'. These examples all come from ecclesiastical settings - unsurprising as it was the Church which brought literacy to England; monastic settings also sheltered individuals from secular dangers like warfare and childbirth (Crawford 2007b: 54). These ecclesiastical writings lead Crawford (2007b: 54-55) to suggest that the elderly gained value with age, at least in this context.

Longevity may have been more difficult to attain in a secular world where violent lifestyles and early deaths were common among those considered worthy of textual recording, especially royalty (Crawford 2007b: 55). While evidence that old age was seen as a wiser phase than that of youth was cited, old age in rulers may also be seen as disadvantageous, especially to those waiting - patiently or not so patiently - for their birthrights (Crawford 2007b: 56). Such writings attest to the presence of elderly men in secular, high status settings, while suggesting some ambiguity in their standing. The absence of women in this category perhaps suggests their lesser importance in a martial masculine world, but little else.

While noting the difficulties of identifying the elderly in skeletal samples, Crawford (2007b) also examines the archaeological evidence: she notes that there was no 'dramatic decline' in status with increasing age, but that the value of artefacts, calculated through presence of precious materials, decreased. Gender differentiation also decreased for both sexes (Crawford 2007b: 57) which, as 'gendered' grave goods tend to be the most valuable, also suggests a decline. Examining weaponry, she notes that while some individuals appear to have given up their warrior status as they aged, other old males reinforced it (Crawford 2007b: 57). Women, she notes, did not fare as well as men in old age (Crawford 2007b: 58).

Crawford concludes that while the social implications of old age in Anglo-Saxon England were neither constant nor secure, the literary evidence suggests that they were venerated and idealised, for males at least (Crawford 2007b: 59). However, while literary evidence was largely ecclesiastical and masculine, secular evidence suggested ambiguity in outcomes. Lower status individuals are not dealt with regardless of sources, while old women received less notice in all sources: monastic, secular and archaeological.

Archaeological evidence from cemeteries across Anglo-Saxon England was used by Stoodley (1999) when examining the lifecycle and gender as part of his larger study on the construction and meaning of gender in the Early Anglo-Saxon burial rite. The sample of 1,095 aged burials was banded into age categories, with the oldest category being 50+ years. He also acknowledges the problematic nature of ageing the elderly, and suggests results in this category should be treated tentatively (Stoodley 1999: 105-106). His study, though, was focused on the artefacts and their distribution, rather than on the individuals who received them. For example, he notes that the age group 20-30 years received the most spears in their graves, with 55 individuals being buried with a spear (32%), with only 18 spears being found in the 50+ age category (10.5%). However, with 148 males in the 20-30 group, 37.2% were buried with a spear, against 29% of 50+ individuals, suggesting the decline in spear burials was not as extreme as suggested by the raw numbers. These figures are

further skewed by the observation that the numbers of unsexed burials with items are not noted, although they are obviously included in the data (Stoodley 1999: 230).

Despite these caveats, this is one of the few studies to examine the older end of the lifecycle in any way. He infers through examination of all artefacts that the final age threshold for both sexes occurs at about 40 years (Stoodley 1999: 117). For women, he suggests that this threshold is related to loss of fertility, but notes that a small number of older women have maintained their status, suggesting that fertility was not the chief reason for this change (Stoodley 1999: 118). For males, he notes that while a smaller proportion are granted a gender signalling burial than females, male gendered burials decline at about 40 years of age too. He wonders if these individuals are now considered to be the same as those who went through life genderless (Stoodley 1999: 118). In addition, the ageing of those older individuals would be affected by known biases (e.g. Molleson et al. 1993), and perhaps rather than at 40 years, this threshold comes at a later age.

It should be noted that although it has been argued that the majority of weapon burials are young adult males in the prime of life, older men were still buried with weapons, and were buried with more weapons and 'higher status' weapons like swords, suggesting that these items do not only relate to masculinity, but also to power and status (Gowland 2002:306).

Three Anglo-Saxon Cemeteries

The present is the funeral of the past,

And man the living sepulchre of life.

(CLARE 1845)

This study is concerned with the elderly of Early Anglo-Saxon England; this is an area of study where cemetery archaeology, rather than settlement archaeology or the analyses of ancient texts, reigns supreme. However, the methods and aims outlined here are applicable to any ancient cemetery site where the human remains are well

enough preserved to allow the analyses of toothwear, alongside other aspects of burial practice (e.g., grave goods, orientation, and depth).

This study attempts to traverse a relatively wide area of Anglo-Saxon England, while at the same time focusing on three local communities. The wide area is necessary partly because small sample sizes from single cemeteries make statistical inference problematic; however, it is still possible to identify subtle differences between the three cemeteries as small communities can demonstrate variation over short distances (Halsall 1995: 40; Gowland 2002: 33). The three cemeteries share many similarities, but also highlight regional differences in burial practices and material culture, and between them cover the entire Early Anglo-Saxon period, from the middle of the fifth century to the first few years of the seventh. A map showing the location of the three cemeteries is found in

Great Chesterford, Essex

The Anglo-Saxon cemetery at Great Chesterford, Essex was excavated over three seasons 1953-1955 although the report was not published until 1994 (Evison 1994). This was a rescue excavation as gravel digging had destroyed about 100 graves and burials had also been damaged by ploughing or were inaccessible due to a roadway. Despite these difficulties, the grave catalogue lists 161 Anglo-Saxon graves, 33 Anglo-Saxon cremations, five Roman cremations, and a quantity of unassociated objects,

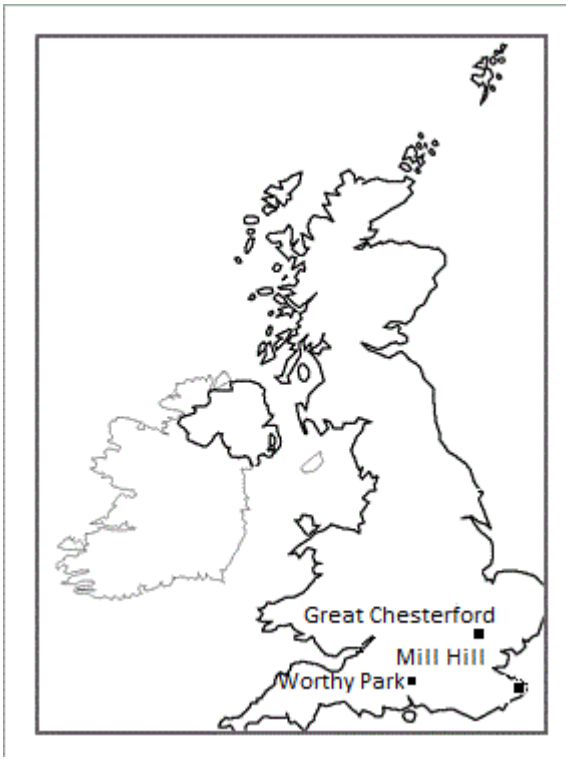

Figure 2-1 Map showing location the three cemeteries, Great Chesterford, Essex; Mill Hill, Deal, Kent; Worthy Park, Kingsworthy, Hampshire

both Roman and Anglo-Saxon (Evison 1994). Evison (1994: 45-46) dated just over half of the graves, largely through grave good typologies and continental parallels, into four overlapping phases AD 450-600. Evison (1994) examined and analysed most of the grave goods herself, although specialist reports were included on animal bones, textiles, glass beads, pottery petrology, x-ray fluorescence of some of the metalwork, Romano-British material, Roman coins, Roman glass, plus a possible identification of the bird represented in the bird brooch from grave 68. The graves, including skeletal position, orientation, limits and layout, social status and chronology were all discussed and the cemetery was also compared to the one at Westgarth Gardens, Bury St Edmunds Suffolk. Line drawings of the graves and grave goods were provided, along with maps illustrating many aspects of the cemetery. A map of the Great Chesterford cemetery can be found in Chapter 3.

Waldron (1994b) wrote the specialist report on the human remains with age and sex estimated using the methods of Krogman and Iscan (1965), the Workshop of Human Anthropologists (1980), Miles (1963), Maresh (1955) and Fasekas and Kósa (1978). No attempt was made to sex juveniles or infants (it should be noted that while Evison

(1994: 33-34) claimed to 'sex' (or more accurately, gender) subadults using grave goods, this thesis has not recognised any such determinations). Stature was estimated where possible using the equations produced by Trotter (1970). Waldron (1994b) also calculated metrical cranial indices as well as non-metric characteristics, but these were presented in tabular form by sex without identifying the particular skeletons. Data on age, sex, the particular methods and/or skeletal element/s used in the determinations as well as pathological anomalies were all presented in Appendices 1 and 2 in the report (Waldron 1994b: 59-64).

A total of 167 individuals were represented in the skeletal material and of the adults (those aged over 15 years), 24 were assessed as male or probably male, 43 as female while six were unable to be sexed. Those aged 15 years or under made up half the cemetery population and included five preterm babies of less than 40 weeks gestational age and a further 12 perinates. These figures do not include the two cases of infants found within their mothers' pelvic cavities.

The Great Chesterford skeletal material was re-examined by Inskip (2008), but poor labelling and missing elements meant that there are some inconsistencies in the two reports (when this material was examined in 2015, there were still some discrepancies, and a misidentified skull was identified for reunification with its appropriate post-crania). These difficulties were largely caused by the original poor storage methods (material stored by skeletal element rather than by individual) as well as the long time between excavation and examination. Despite such problems, there were few discrepancies between the two sets of results (Inskip 2008: 63). This thesis uses the original data from Waldron (1994b) not only to maintain consistency, but also because not all data was presented in Inskip (2008).

The Great Chesterford material was used by Pomeroy and Zakrzewski (2009), who compared the sexual dimorphism of cross-sectional size and shape of long bone shafts with those of a medieval Muslim Spanish population from Écija. Biomechanical studies suggest that these shapes and sizes reflect mechanical loading, and thus were used to infer gendered activity across the two populations (Pomeroy and Zakrzewski

2009: 51). Using indices related to external diaphyseal diameters and bilateral asymmetry they found a general lack of significant differences in the upper limb bones, but more significant sex differences in the Spanish population than from Great Chesterford for the lower limbs (Pomeroy and Zakrzewski 2009: 59). They suggest that while the Great Chesterford men and women probably both engaged in agricultural tasks, there were some tasks – cloth manufacture and bread making – that were feminine business; in the Muslim population women appear to have been more constrained than men in their activities (Pomeroy and Zakrzewski 2009: 60). These results suggest that there were social differences between the people of Great Chesterford and the people of Écija (Pomeroy and Zakrzewski 2009: 61).

Mill Hill, Deal, Kent

The cemetery on Mill Hill, Deal, Kent was excavated in the years 1986-1989 by the Dover Archaeological Group under the supervision of Keith Parfitt (Parfitt and Brugmann 1997), ahead of development of the site for housing. The cemetery sits on a hill which has been the focus of human activity since the earlier Neolithic, perhaps due to its prominent position overlooking the sea and much surrounding countryside (Parfitt and Brugmann 1997: 1). The Anglo-Saxon cemetery is arranged around a Bronze Age ring ditch surrounding a large barrow which must have been visible when the cemetery was in use. Iron Age graves were also found, as well as Roman ditches and quarries (Parfitt and Brugmann 1997: 12). A map of the cemetery can be found in Chapter 7.

The human remains were examined by Anderson and Andrews (1997). Although preservation was generally poor, from 76 graves 77 individuals were identified with four graves considered to be those of children due to their size, as no skeletal material was preserved (Anderson and Andrews 1997: 214-215). Parfitt and Brugmann (1997: 125) note that all age and sex estimations were made from osteological evidence and were not influenced by associated grave goods; however, the particular methods of ageing and sexing are not noted. Preservation indices, metric and non-metric characteristics, pathology and dental characteristics and

disease were noted for each individual (Anderson and Andrews 1997: 214-217). Stature was estimated for twelve individuals using the equations of Trotter and Gleser (1952). Tables comparing sub-adult mortality, adult stature, metric and non-metric indices and dental characteristics with other Anglo-Saxon cemeteries are also presented. Palaeopathology, including dental conditions, are discussed in detail (Anderson and Andrews 1997: 225-239).

Specialist reports on Chronology, Anglo-Saxon Kent and its people, glass vessels, textiles, metalwork, as well as several unique finds are included as chapters or Appendices in the report. The grave catalogue provides substantial data on each burial, and graves and grave goods are illustrated with line drawings and also black and white photographs.

The placing of burials in the landscape is a practice that may be imbued with cosmological significance (Parker Pearson 1999: 193; Williams 1998: 91). Williams (1998: 92) discusses Anglo-Saxon cemeteries, including Mill Hill, which have focused on or emulated ancient monuments and suggests that there are approximately 330 examples of associations between such monuments and Anglo-Saxon burials. The practice changed over time in Anglo-Saxon England, increasing in popularity as grave goods declined (Williams 1998: 103). The earlier Mill Hill burials are clearly focused on the centre of the presumed barrow, with two distinct plots on opposite sides of the monument. The latest Mill Hill graves, while not focusing on the ancient barrow, appear to emulate it with barrows of their own. Funerals at Mill Hill would have linked both the mourners and the dead with the ancestors; the supernatural power of ancient peoples were connected, via their lands and monuments to the Anglo-Saxon burial parties: they placed their dead in a liminal place situated between the past and the present thus establishing their own place in the landscape (Williams 1998: 103).

Rather than examining the dead or the funeral ceremony, Sayer (2010) used three cemeteries including Mill Hill to examine ‘social time’ for the living people of the community. This study suggests that social status of an individual was determined by

those who were alive with them, an idea that is obvious but rarely recognised (Sayer 2010: 60). The funeral ritual brings together people and material culture in a complex relationship with the community, dependent on the identity (or identities) of the deceased, as well as religious and political requirements (Sayer 2010: 61-62). This study looked at the chronology of the burials, spatial arrangements and the grave goods to determine who was considered 'head of the community' for a particular period, a status allocated to one person or a pair of people per generation (Sayer 2010:78-79). The transformation of identities seen here transmitted and recreated an interpretation of social memory from the past to the future (Sayer 2010: 79).

Worthy Park, Kingsworthy, Hampshire

The cemetery at Worthy Park, Kingsworthy, Hampshire, was excavated in 1961-2 by Sonia Chadwick Hawkes. The site had been discovered during its use as an American military camp during World War II, and although much damage had been done through this use and later vandalism, it wasn't until a new owner wished to bulldoze the site that a rescue excavation was launched with his permission and cooperation (Hawkes and Grainger 2003: 5). The excavated area was limited by a driveway and clumps of well grown trees, and the Ministry of Public Works (who financed the excavation) believed that a 'representative sample' was sufficient (Hawkes and Grainger 2003). The excavated area was tightly packed with 94 inhumation graves and 46 cremations and it is estimated that only half the graves were uncovered (Hawkes and Grainger 2003: 1). The cemetery sat on raised ground on the northern side of a valley, and may have been used by the inhabitants of a settlement half a kilometre to the south-east, although this was not known at the time of excavation (Hawkes and Grainger 2003: 1). Due to lack of funding for post-excavation work and the necessity to work on other projects, the report on this cemetery was not published until after the excavator's death, some forty years after the excavation (Hawkes and Grainger 2003). A map of Worthy Park can be found in Appendix 4.

The report on the skeletal material was prepared by Wells and colleagues (2003: 153). Denston received the bones directly after excavation at the Duckworth

Laboratory, recording the data and reconstructing skeletons for Don Brothwell, who was to be the chief author of the report. However, Brothwell moved to London shortly afterwards, taking some skeletons and parts of skeletons with him and ultimately declining to finish the report (Hawkes and Wells 1983: 4). In the 1970s, Wells took over the report on the human remains, which was published separately by Hawkes and Wells (1983). These data were enhanced and added to in the final cemetery report by Wells, Grainger, Denston and Hawkes (2003).

One hundred individuals were aged, sexed and examined, although the particular methods for these assessments were not noted. Age, sex, stature (using Trotter and Gleser (1952), preservation, dental conditions, cribra orbitalia and osteoarthritis were all presented in a table for each skeleton (Wells et al. 2003-157). Detailed discussion of the palaeopathology is provided. Non-metric variants are also considered in detail and a large section on muscle development completes the report (Wells et al. 2003). A section covering the cremations was written by Justine Bayley (Wells et al. 2003: 188-189).

While this cemetery report largely eschews analysis, there are specialist reports, like that on the human bones, which provide some exploration of the evidence. Further, associated structural features, textile analysis and analysis of copper alloy, silver and mineral preserved organic material are featured. Maps, line drawings of graves and associated artefacts and black and white photographs of the most notable burials illustrate the report.

Before the publication of this report, several papers by Hawkes and Wells highlighted notable burials from the Worthy Park Cemetery. Hawkes and Wells (1975b) examined two ‘uncommon’ burials in graves 43 and 78. Both were buried prone, a position generally interpreted as a result of punishment or fear (Meaney 1981: 249-262; Reynolds 2009: 73, 90) and one, grave 78, may have been buried with her limbs bound (Hawkes and Wells 1975b: 118). While nothing remarkable was noted about the woman in grave 43, a lesion was found on the left femur of the individual in grave 78 which was interpreted as being caused by a violent rape six months or so before

the young woman's death, which may have been brought about as punishment for the crime of being raped. Although it is possible that events may have occurred as interpreted, this paper is generally considered to take inference too far (Reynolds 1988).

Worthy Park's Burial 26, containing a woman and a baby, was the subject of another paper by Hawkes and Wells (1975a). Although the skull and shoulders were missing due to a pipe trench, the woman lay in a supine position with legs extended, and the child was found between the woman's femora with legs and feet within the pelvic area. Moreover, there was a mound of chalk placed over the child and whether this was a deliberate placement for purification, sentiment or other reason it is difficult to say, except that it appears that the child was visible on burial (Hawkes and Wells 1975a: 47, 51). Hawkes and Wells (1975a: 47, 51) found that the woman's pelvis was somewhat 'android' and that the infant was larger than average, suggesting that she and the child died during or soon after labour. While they consider the possibility of post-mortem expulsion of the child (a thesis perhaps supported by the chalk covering) they suggest a more commonplace explanation of a child bound by the umbilical cord.

A third paper on an unusual Worthy Park burial considers a man buried without grave goods who lacked all the bones of his left upper arm, including the scapula and clavicle (Hawkes and Wells 1976). The skeleton was well preserved and meticulously excavated and there appears to be no doubt that this was a birth defect; the defect was accompanied by compensatory anomalies, including transverse wedging of vertebral bodies, rotation of vertebrae and spinous processes deflected to one side. Due to the absence of limb muscles, the rib cage was much modified (Hawkes and Wells 1976: 1233-1234). The man also appears to have been the victim of violence, with a well-healed fracture of the mandible, and healed sword cuts on the left parietal and also possibly on the right zygomatic and maxilla (Hawkes and Wells 1976: 1235).

Analytical Methods

Now that the cemeteries which are the focus of this thesis have been introduced, the next step is to examine the condition of the elderly in these three cemeteries. To do this, the oldest individuals need to be identified. Only when that is done, can the graves and grave goods be examined to determine what, if anything, can be inferred about the lives of those who lived longest.

To identify the elderly, the method outlined in Chapter 4 will be used (Cave and Oxenham 2016). All adults will be examined and re-aged using this method, not just those originally aged in the oldest age categories; this provides a control, allowing the efficacy of the method to be confirmed or otherwise: if too many individuals of younger age categories (i.e., 18-40 years) are placed in the wrong age group by this method, this would suggest the method was faulty. Each cemetery was analysed as a single entity and was considered separately for purposes of finding a suitable model population; this is a model of known ages with a similar age structure of the cemetery being examined. Each cemetery was re-aged separately as it cannot be assumed that toothwear rates were the same in these three communities. Details of these findings can be found in chapters 4 (Worthy Park alone), 5 and 6 (all three cemeteries). Results of this re-ageing process can be found in tables in Appendix 4.

While Chapter 4 presents the re-ageing method using Worthy Park cemetery to illustrate the method, Chapters 5 and 6 are devoted to the analyses of the graves in the three cemeteries. The methods of analysis are described in greater detail in the relevant chapters, but briefly, this involves the quantitative method of chi squares with Bonferroni post hoc corrections. In addition, due to the relatively small dataset with a wide range of grave qualities to be analysed, this statistical testing is supported and enhanced by a qualitative examination of the conditions of burial of all individuals.

Conclusion

This chapter has introduced Anglo-Saxon England and its archaeology. It has highlighted approaches to Anglo-Saxon cemeteries, especially archaeologies of age and the elderly, such that it is. It has been shown that the elderly are a much under theorised segment of archaeology, including Anglo-Saxon archaeology. This brings us to the point where our examination of elders in this time and place can be presented.

The next five chapters in this thesis by compilation presents a series of publications (three fully published, one in press and one under review). The following Chapter Three provides a general introduction to Anglo-Saxon age archaeology to set the scene for the later examination of older individuals.

This chapter examines the lives of the children who were buried in the Great Chesterford cemetery. The graves and grave goods of the infants and children, who made up half the excavated population of Great Chesterford, are compared to the older individuals, and not only provide a glimpse of the lives of these young individuals, but also illustrates the general burial practices found in an Anglo-Saxon cemetery. The cemetery of Great Chesterford was chosen for this examination of infants and children because large numbers of young individuals are rarely found in other Anglo-Saxon cemeteries. Despite this somewhat anomalous situation, the graves and grave goods of Great Chesterford adults comply with the usual practices of most Anglo-Saxon cemeteries, meaning that it is an excellent site to begin this study of older individuals in Early Anglo-Saxon England.

Chapter 3 Out of the Cradle and into the Grave

Children have never been very good at listening to their elders, but they have never failed to imitate them

(BALDWIN 1961)

In Chapter Two the archaeology of Early Anglo-Saxon England was introduced. Approaches to Early Anglo-Saxon archaeology, age and identity were reviewed. Despite the efforts of Stoodley (1999) and Crawford (2007b) hampered as they were by the inability to identify the invisible elderly, studies focusing on the elderly were lacking. While this thesis intends to critically engage with the life and times of these invisible elderly, it is first necessary to set the scene and illustrate Early Anglo-Saxon burial archaeology.

Chapter Three will illustrate the burial archaeology of the people of Early Anglo-Saxon England through the prism of the burial of children and infants interred in the Great Chesterford cemetery. Great Chesterford is one of the few Anglo-Saxon cemeteries where the whole community, even infants and children, were buried in its confines, and as the burials of adults here comply with Anglo-Saxon norms, it is an excellent cemetery to demonstrate the social, cultural and funereal practices of Early Anglo-Saxon England. The burials and grave goods of the infants and children are compared to those of all older individuals, thus setting the scene for the rest of this thesis.

Publication Information

Out of the Cradle and into the Grave: the children of Anglo-Saxon Great Chesterford, Essex, England: pp. 179-95 in Murphy, E.M. & Le Roy, M. (eds.), *Children, Death and Burial: Archaeological Discourses.* Oxford: Oxbow Books.

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Current Status

Published July 2017

Declaration of authorship

Composed overall question, background research; formulation of arguments in manuscript, statistical analysis, discussion and conclusion.

Signed

Christine Cave

Refinement of arguments, contributed to overall question and methodology, argument formulation and editorial supervision of paper, rewrote sections of manuscript

Signed

Professor Marc Oxenham

NOTE ON PUBLISHED PAPERS

The text, tables and figures of the published paper comprise the rest of the chapter. The references will be found, with all other references, at the end of this thesis.

A PDF copy of the paper as published can be found in Appendix 1

OUT OF THE CRADLE AND INTO THE GRAVE:
the children of Anglo-Saxon Great Chesterford, Essex

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Abstract

This paper seeks to shine a light on the lived experience of Anglo-Saxon children, especially the infants. Unlike most Anglo-Saxon sites, Great Chesterford appears to be the final resting place of the whole community, providing an opportunity to examine usually invisible children. As children are buried by adults, inferences can be made about their attitudes to the dead child, as well as community concepts of children and childhood. Where and how they are buried not only reflect adult points of view, but also provide a glimpse, albeit through the distorted lens of the grave, of the life of that child. We found that although some were buried with exceptional treatment, in general children were supplied with fewer, less expensive grave goods than adults; some were buried in ways that marked them as unusual. Nonetheless, most usual adult grave goods are represented in juvenile graves. While the funeral tableau provides an aid to remembering the dead, the burying of artefacts also functions as an aid to forgetfulness. Therefore, we conclude that the unwillingness or inability to commit scarce resources to a dead child's grave is not necessarily a sign that their deaths were without meaning or that the child was not missed.

Keywords

Burial, infant, juvenile, childhood, mortuary, grave goods, Anglo-Saxon England

Introduction

I was once a child. You were once a child. All of the scholars cited in this paper were once children. Childhood, or socio-biological immaturity, is an experience shared by all adult humans, sometimes remembered sometimes forgotten, but always having shaped our lives. This stage of the life cycle may be conceptualised in different ways by different societies, but it is essentially that period where a child grows and learns how to be an adult, through socialisation, formal education or imitation.

The study of children is undoubtedly important in itself, but most aspects of childhood also involve adults, so understanding childhood is also essential to understanding the adult world (Orme 2009). Every culture creates and defines the nature of childhood (Baxter 2006), but adults are not the only influence on children; there exists a self-maintaining children's culture out of reach to outsiders (Sanchez Romero 2008). Although subject to their parents' desires and agency, children also have their own agency; while they embrace cultural customs, they also struggle against them (Crawford and Lewis 2008). Thus children learn formally and informally from adults and peers, interpreting messages, ultimately transmitting refashioned culture to the next generation (Scott 1997; Baxter 2005).

While children are buried by adults, inferences can also be made about the life of the child; where they are buried and how they are buried reflects attitudes of adults to children, which affect the life of the child. Grave goods, orientation, depth and positioning all provide clues to infer cultural norms — like the age a child is considered a full member of society, or the age a child is expected to become adult.

This paper seeks to shine a light on the lived experience of Anglo-Saxon children, especially those less than two years of age. We start by introducing Anglo-Saxon funerary practices, and the cemetery at Great Chesterford, Essex, which was in use AD 450-600. Then we will examine the burials of infants and children and compare them with others. We will also present an illustrative case study, before a short discussion and conclusion.

Anglo-Saxon archaeology

Anglo-Saxons are visible in their distinctive gendered funerary ritual – women buried with brooches and jewellery, men with weapons (Lucy 2000). Consequently, Anglo-Saxon burial archaeology has often used grave goods to determine the sex (or more accurately gender) of skeletons (Lucy 1997; Stoodley 1999); some even favour the determination of sex by grave goods over biological sexing if the two should disagree (see, for example Hirst 1985; Evison 1987). Great Chesterford contains twenty children 'sexed', or gendered, through grave goods, seventeen female (or feminine) and three male (or masculine) (Evison 1994).

Few infants are found in Anglo-Saxon cemeteries in England (Crawford 1999 170): the cemetery at Berinsfield, Wallingford, contains only one infant among 118 graves, while the youngest burial at Mill Hill, Deal, Kent, was two years old at death (Parfitt and Brugmann 1997); Stoodley (1999) developed a dataset of forty-six Anglo-Saxon cemeteries containing 1095 aged burials, but only twenty-eight (2.6%) individuals were aged less than one year.

The Missing Children

This absence of infants is not unusual and the differential burial of infants has a long history in time and space (Scott 1999; Kamp 2001; Lewis 2007; Lucy 1994; Murphy 2011). This may be because a child requires particular treatment for cultural reasons, or that they have not yet achieved personhood. Many cultures fear dead children — they may either become malevolent sprits or be too young to ward them off (Tsaliki 2008; Barretto-Tesoro 2008). Notwithstanding, quite contrary views have also been reported with dead, or even dying children, having been seen as transforming into angels (e.g. see Scheper-Hughes 1989).

Under-representation could also be the result of the fragility of infant bones, due not only to bone mineral density but also burial position (Manifold 2010); however, infants are found in larger numbers in comparable sites from Roman Britain and the Christian Anglo-Saxon period (Crawford 1993; 2007a; 1999; Stoodley 2000; 1999). Infants may have been buried in shallow graves since disturbed by animals or the

plough (Crawford 1999; 2000; Stoodley 1999; 2000) or, as Stoodley (1999) suggests, (although unlikely) child mortality may have been as low as the figures suggest. Alternatively, 'other methods may have been used to dispose of the quantity of dead infants that must have been cluttering up the Anglo-Saxon world' (Crawford 1993 3). These 'other methods' may have been less visible archaeologically (Crawford 2000; Härke 1997; Stoodley 1999; 2000). Infant bones have been found in at least eleven Anglo-Saxon settlements, in pits, ditches, under floors, disregarded as rubbish and ignored in the site reports, perhaps missed by archaeologists focused on pot sherds or weaving tools (Hamerow 2006; Crawford 2008; Manifold 2010). Infants may also be interred as deliberate foundation or termination deposits associated with entrances and liminal spaces (Hamerow 2006).

One Anglo-Saxon cemetery provides an excellent opportunity to study the life of the Anglo-Saxon child. Great Chesterford, Essex, includes the graves of eighty-eight subadults (including sixty-three infants less than two years of age), alongside the burials of eighty-three adults. Therefore, it appears to be the final resting place of the whole community; this study involves a re-examination of its mortuary archaeology.

Methods, materials, results

The Anglo-Saxon cemetery at Great Chesterford was excavated under rescue conditions during 1953-55, and 161 graves were discovered which included 171 inhumations, thirty-three cremations, two horse burials and two dog graves (Figure 3.1). Evison (1994) dated the site through grave good typologies to AD 450-600. He concluded that it represents a community of normal Anglo-Saxon economic status, with only two swordsmen and a few rich women present, no gold and very little silver; the jewellery present is largely of bronze.

Analytical Procedure

Data from the cemetery were analysed using chi-squared statistics and independent t-tests with a 0.05 significance level. Three basic comparisons were made between subadults (0-15 years) and adults (16+ years); with subadults also assessed as the

separate categories of infants (0-2 years) and children (3-15 years); with a further category of combined children and adults (3+ years) that excludes infants.

Demography

The excavated part of the Anglo-Saxon cemetery at Great Chesterford contained the remains of 173 individuals, including two perinates found within the pelvic region of their mothers (Table 3.1). An abridged life table of the burials (Table 3.2) shows that life expectancy at birth was 18.4 years, increasing to a maximum of 26.4 years in the 5-9.9 year age category.

To assess fertility, a series of commonly employed measures were calculated, although the source report employed non-standard age categories – the juvenile/adult ratio (normally 5-15 years:20+ years had to be modified to 5-15 years:25+ years) is 12:60 or 0.20; the D20+:D5+ ratio modified and reported as a D25+:D5+ ratio, is 60:88 or 0.68; the ${}_{15}P_5$ ratio (normally 5-19 years:5+ years, modified to 5-25 years:5+ years) is 28:88 or 0.32. The adult sex ratio of 44 females to 37 males is 0.842 (not statistically significant from a 1:1 binomial distribution, two tailed p=0.505), while the sex ratio for the potential female fertile period (15-35 years, 15 males, 19 females) is 0.79 (again, not statistically significant from a 1:1 binomial distribution, two tailed p=0.608) (Bellwood and Oxenham 2008; Willis and Oxenham 2013b; Dommet and Oxenham 2011).

Waldron (1994b) osteologically determined the sex of the adult skeletons, but Evison (1994) also 'sexed' or gendered individuals through their grave goods: children with brooches or beads (n=17) deemed to be female and those with weapons (n=3), were recorded as male. The ratio of feminine to masculine subadults, based on grave good determinations was found to be statistically significantly different to a hypothesised 1:1 distribution of male and female subadults (binomial test, two tailed, p=0.003).

Burial Practices

The mean burial depth for adults was 1.07 m, and for subadults (0-15 years) it was 0.89 m. An independent samples t-test found this difference to be significant (t=3.271, p=0.001). With the exception of the age category 3-5 years, where 3/7

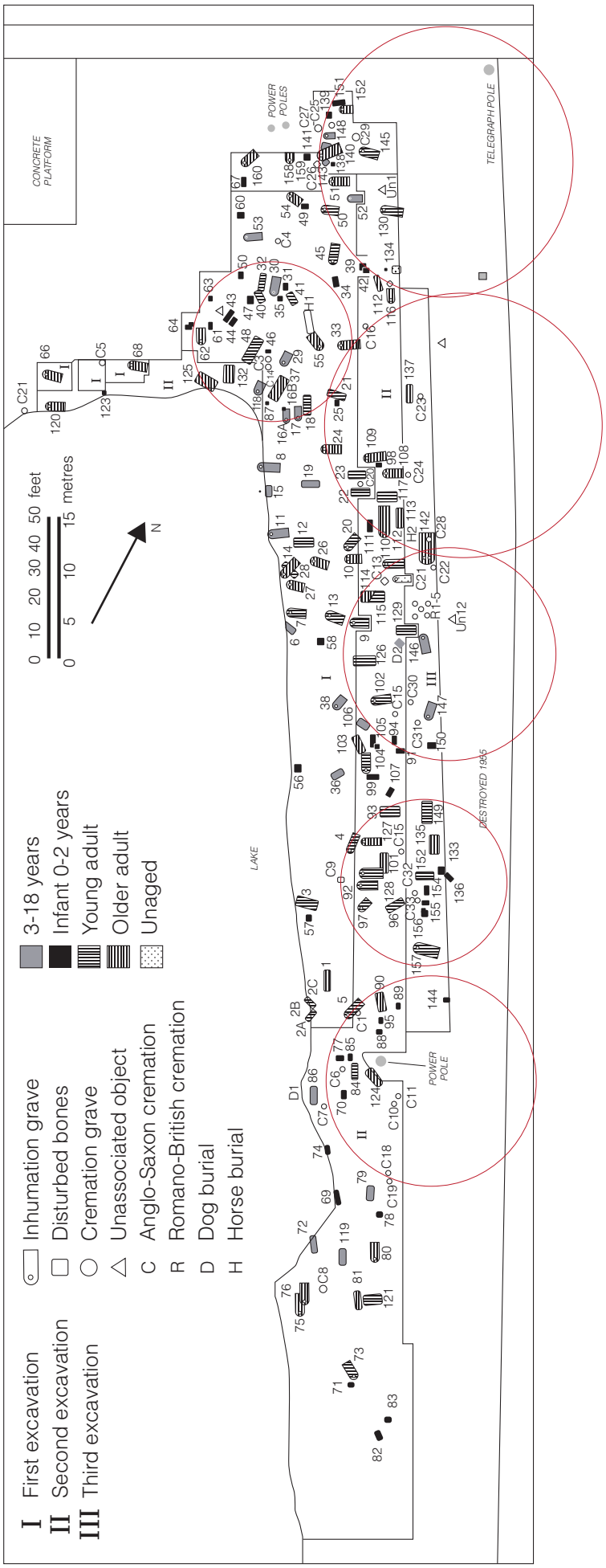

Figure 3-1 Map of Great Chesterford Cemetery; Geraldine Cave after Evison (1994)

(42.9%) of individuals were buried at depths of at least 1.3 m, burial depth increases with advancing age until adulthood is reached.

Subadults (0-15 years) were interred in multiple burials significantly more often than adults (16+ years) (Tables 3.3 and 3.4). Subadults were buried on their sides (either right or left sides) significantly more than adults, while infants were buried on their sides significantly more often than both children (3-15 years) and a combined sample of children and adults (3+ years).

Table 3-1 Great Chesterford Demography (ages in years) (Data after Waldron 1994)

	Pre-term	0-2	3 to 5	6 to 9	10-15	'Juvenile'	15-25	26-35	36-44	45+	Adult	Unaged	**Total**
Female							9	10	18	6	1	1	**44**
Male							7	8	8	8	6	0	**37**
Unsexed	17	48	7	10	2	1	0	2	0	0	2	2	**6**
TOTAL	17	48	7	10	2	1	16	20	26	14	9	3	**173**
Sex ratio							0.78	0.8	0.44	1.33			**0.84**
Total Subadults (0-15 years) 85													
Total Adults (16+ years) 88													

Table 3-2 Abridged Life Table for Great Chesterford (N=160) (Data after Waldron 1994)

x	nx	Dx	dx	lx	qx	tx	Tx	$e^{o}x$
0-4.9	5	72	45	100	0.45	387.5	1837.5	18.4
5-9.9	5	10	6.3	55	0.114	259.4	1450	26.4
10-14.9	5	2	1.3	48.8	0.026	240.6	1190.6	24.4
15-24.9	10	16	10	47.5	0.211	425	950	20
25-35.9	10	20	12.5	37.5	0.333	312.5	525	14
35-44.9	10	26	16.3	25	0.65	168.8	212.5	8.5
45-59.9	10	14	8.8	8.8	1	43.8	43.8	5

x: Age category in years

nx: Years in age category

Dx Number of deaths

dx Percentage of deaths

lx: No of survivors entering: indicates what percentage of a theoretical original population of 100 people remains alive at the end of 5 each year period [calculated by subtracting dx during the preceding interval from lx in the same interval]

qx: Probability of death: calculated by dividing the dx during an interval by the lx entering that interval

tx: Total years lived between X and X+5: total number of years lived by all individuals during each interval[formula: Lx=nx(lx+lo)/2; where lx is number of survivors entering interval x and lo is the number of survivors entering the following interval]

Tx total years lived after lifetime: total number of years remaining in the lifetimes of all individuals entering each age interval [add values in Lx column for that interval and all succeeding intervals]

$e^{0}x$: life expectancy: average number of years an individual entering age interval x can expect to continue to live [$e^{0}x=Tx/lx$]

Table 3-3 Contingency table data for burial practices and grave good types by age category (Data after Evison 1994)

Age Category	0-2 years			0-15 years			3-15 years			3+ years			16+ years		
	With	Without	%	With	Without	%	With	Without	%	With	Without	%	With	Without	%
Multiple burial				13	70	15.90							2	83	2.35
Side burial	14	1	22.20	23	11	27.70	9	10	45.00	21	80	20.00	12	70	14.10
Reverse Orientation	7	29	11.10	8	48	9.60	1	18	5.00	6	97	5.70	5	79	5.90
Non normative burials	43	20	68.30	49	34	59.00	6	14	30.00	27	78	25.70	21	64	24.70
Any grave goods	28	35	44.40	44	39	53.00	16	4	80.00	91	14	86.70	75	10	88.20
Gendered goods	13	12	20.60	21	21	25.30	7	9	35.00	61	31	58.10	53	22	62.40
Weapons and jewellery	7	56	11.10	12	71	14.50	5	15	25.00	56	49	53.30	51	34	60.00
Jewellery	6	57	9.50	9	74	10.80	3	17	15.00	37	68	35.20	34	51	40.00
Beads	11	52	17.50	16	67	19.30	4	16	20.00	31	74	29.50	26	59	30.60
Polychrome glass beads	3	60	4.76	4	79	4.80	1	19	5.00	22	83	21.00	19	66	22.40
Amber beads	4	59	6.40	6	77	7.20	2	18	10.00	20	85	19.10	18	67	21.20
Multiple bead types	5	58	7.90	7	76	8.40	2	18	10.00	23	82	21.90	21	64	24.70
Containers	7	56	11.10	11	72	13.30	4	16	20.00	22	83	21.00	18	67	21.20
Total in age category	63			83			20			105			85		

Table 3-4 Results of significance testing of burial practices and grave good types by age category

	Comparison	χ^2	p
Multiple burial	Subadult>Adult	7.585	**0.006**
	Subadult>Adult	32.060	0.000
	Infant>Non-Infant	29.268*	**0.000**
Burial on side	Infant>Child	6.125*	**0.013**
	Subadult>Adult	2.770	0.096
	Infant>Non-Infant	5.836	**0.016**
Reverse orientation	Infant>Child	0.533*	0.465
	Subadult>Adult	20.363	**0.000**
	Infant>Non-Infant	29.316	**0.000**
Non-normative burial	Infant>Child	9.186*	**0.002**
	Adult>Subadult	25.219	**0.000**
	Non-Infant>Infant	33.976	**0.000**
Grave goods present	Child>Infant	6.343	**0.012**
	Adult>Subadult	4.947	**0.026**
	Non-Infant>Infant	1.730	0.188
Gendered goods	Child>Infant	0.266	0.606
	Adult>Subadult	37.162	0.000
	Non-Infant>Infant	29.268	**0.000**
Weapons or jewellery	Child>Infant	6.128	**0.013**
	Adult>Subadult	18.746	**0.000**
	Non-Infant>Infant	13.671	**0.000**
Jewellery	Child>Infant	0.008	0.784
	Adult>Subadult	2.865	0.090
	Non-Infant>Infant	3.056	0.080
Beads	Child>Infant	0.000	1.000
	Adult>Subadult	9.492*	**0.002**
	Non-Infant>Infant	6.921*	**0.009**
Polychrome glass beads	Child>Infant	0.00*	1.000
	Adult>Subadult	6.672	**0.010**
	Non-Infant>Infant	4.20*	**0.040**
Amber beads	Child>Infant	0.003*	0.957
	Adult>Subadult	8.006	**0.005**
	Non-Infant>Infant	5.531	**0.019**
Multiple bead types	Child>Infant	0.00*	1.000
	Adult>Subadult	1.846	0.174
	Non-Infant>Infant	2.670	0.102
Containers	Child>Infant	0.416*	0.520

χ2 Pearson's uncorrected

* Yates corrected χ2 used when any value <5

Subadult <15 years Adult >15 years

Infant <2 years Non-Infant >2years

Child 2-15 years

Comparisons: first value (e.g. Subadult) greater than second (e.g. adult)

Values in Bold signify statistical significant difference - p<0.05

Most individuals at Great Chesterford were interred south-north (head to the south) or west-east (head to the west); reverse orientations are those between 116°-251° from True North (Evison 1994, 38-9). Significance testing suggests that infants are significantly more likely to be buried in reverse orientation compared to the rest of the population, but differences between infants and children (3-15 years), subadults and adults were not significant (see Tables 3.3 and 3.4).

Some individuals were buried in a way that marked them as different. These include prone burials, those without surviving grave inclusions, those buried with amuletic artefacts and burials containing large rocks. The largest category of non-normative burial is that without surviving grave goods (26.3%; 45/173); there are multiple examples of non-normative orientation and graves containing large rocks, as well as a mass grave (#83) containing six pre-term babies (see Table 3.3) (Connor 2009). Testing suggests that the difference between subadults and adults, infants (0-2 years) and all aged 3+ years (combined children and adults), and infants and children (3-15 years) in receiving a non-normative burial is statistically significant (see Table 3.4) with the chance of receiving a non-normative burial decreasing with increasing age.

Grave Goods

Only 11.8% of adults were buried without any surviving grave inclusions, while 45.9% subadults had no goods (see Table 3.3). The differences between subadults and adults, between infants and all others (3+ years) and between infants and children (3-15 years) in relation to the presence of grave goods are significant (see Table 3.4).

The average number of beads in a necklace (21.07 overall) was also examined and found to peak in the 10-15 years age group. An independent samples t-test compared the mean number of beads worn by subadults compared to those worn by adults ($t=3.130$, $p=0.004$), as well as differences between infants and the rest of the population (3+ years) ($t=3.500$, $p=0.002$), and infants and children ($t=2.157$, $p=0.049$), finding significant differences between these categories.

To determine if any particular grave good was more likely to be placed with a child, χ^2 values were calculated for burials with or without weapons, jewellery, containers and beads. The popularity of polychrome glass beads and amber beads was also tested, as well as the likelihood of receiving more than one type of bead (see Tables 3.3 and 3.4). The results show that both subadults (0-15 years) and infants are treated significantly differently to older individuals in the placement of weapons, jewellery, polychrome glass beads, amber beads and of more than one type of bead. They are not treated significantly differently in the placement of containers or monochrome beads. Infants were treated significantly differently to children (3-15 years) in the placement of weapons and jewellery only.

Among those who received goods, the placement of apparent gender-indicating items (brooches, pins, girdle hangers, beads and weapons) was compared to those who received only gender neutral goods (likely to be deposited with both males and females, including knives, containers and nails) (see Table 3.3). Subadults received significantly fewer gendered grave goods relative to neutral goods than adults, but infants were not treated significantly differently to children (3+ years) or all older individuals (3+years) (see Table 3.4). The types and numbers of all grave goods deposited with infants (0-2 years) are presented in Table 3.5.

Case Study – Infant Grave #99

Three children were buried with apparent masculine grave good assemblages of weapons. Skeletons #16a (8-9 years) and #86 (7-8 years) were each buried with a spearhead, shield, knife and buckle; #86 also had a dog sitting approximately 10 cm above the feet. The third ‘masculine’ child was skeleton #99, aged at 1-2 years on the basis of dental eruption and long bone measurement, and buried with a spear, knife, buckle and a bronze ring; this child will be the focus of the case study.

Table 3-5 All grave goods for infants (0-2 years) (Data after Evison 1994)

	Pre-term (n=16)	0-2 years (n=49)
Brooch		2
Bracelet/Anklet/Finger ring		4
Pot/container	1	6
Amber beads		5
Monochrome glass beads		10
Polychrome glass beads		3
Roman coins		4
Spear		1
Knife		1
Buckle	1	1
Key		2
Ring	1	2
Pin		1
Miscellaneous Bronze	1	2
Miscellaneous Iron	1	4
Nail		5
Hobnail		2
Glass fragment		1

Although weapons are associated with sexed, thus adult males, and the two older children could possibly have been apprentice warriors, or able to play warrior games, this does not provide proof that these children were male. These considerations cannot apply to #99 who, both physically and developmentally, would have been unable to wield a spear. At 19.7 cm the spearhead recovered from this burial is shorter than the average of the nineteen Great Chesterford spears (25.1 cm), but it is still well within the range, being longer than five of them, three the property of adults. The spear was also placed in the grave in a way that it extended past the child's head, with the tip touching the end of the grave. This would tend to suggest that it was longer than the height of the child, a finding that may indicate it was not a specially manufactured toy and that its placement is symbolic. It could be symbolic of the child's warrior role in the afterlife, or symbolic of the role the child did not live

to assume, or placed to invoke the care of warrior ancestors (Waterman and Thomas 2011). It may represent the status of the child's family, or some other role or position. Archaeologists may ascribe an adult role to #99 due to the nature of the grave goods, although the individual had died in infancy, too young to participate in community activities (Evison 1994; Waterman and Thomas 2011). Yet, a spear may have a different meaning when carried by a child to that when it is carried by an adult.

The child was buried in a normal orientation of 60°, while the closest nearby graves were oriented at right angles to it, although still 'normal' (normal range is all excluding 116°-251° from true north). This grave was surrounded by burials largely lacking high status gendered grave goods – including three weaponless males and only one individual with a brooch. The infant #99 appears to be the highest status individual in the cluster (see Figure 3.1). Was this child a 'foundation burial', the first burial in the group? Were great hopes held for the child that were shattered by early death? This child demanded notice at the time of burial, and still demands notice today. This glimpse of Anglo-Saxon life is short and shadowed by doubts and difficulties.

Discussion

Demography

The children of Great Chesterford were born into a society that buried everyone in the community cemetery. The demographic profile indicates high childhood mortality, with a lower life expectancy for women compared to men, a situation common for early populations (Waldron 1994b 59; Evison 1994). The life table shows that 45% of Great Chesterford inhabitants died before their fifth birthday, but if an individual survived to reach that age, then they could expect to live another 19 years. However, this calculation is affected by the difficulties of ageing mature skeletons, and the entrenched under-ageing of older individuals (Lucy 2005; Cave and Oxenham 2016). It is reasonable to infer that while there was high childhood mortality at Great Chesterford, any individual who survived the early dangerous years could hope for a reasonably long life.

Most fertility measures undertaken here suggest unremarkable levels of fertility, expected in an established agricultural community (Bocquet-Appel and Dubouloz 2004; Bellwood and Oxenham 2008). The modified ${}_{15}P_5$, conversely, can be interpreted as indicating a somewhat elevated fertility when compared to the data of Bocquet-Appel and Dubouloz's (2004). As sub-five year olds make up 45% of the total assemblage, a relatively elevated level of fertility appears reasonable.

Burial Practices

While subadults aged 0-15 years were generally buried in shallower graves than adults, there are possible reasons for this other than lack of care or reduced energy expenditure on children. Few graves have dimensions other than depth recorded, but 'most graves were the minimum size necessary to receive the body'(Evison 1994 28). Given that it is more awkward to dig a deep small grave than a deep large grave (Crawford 1993 85), it follows that grave depth should increase with size and therefore with age at death. Except for the 3-5 years age category (three deep 3-5 years graves are found in a cluster of deep burials probably due to a slightly easier to dig soil matrix), this was the case. Shallow subadult burials may be solely related to the mechanics of grave digging (Crawford 1993), rather than an indication of lesser care or energy expenditure, but could also be caused by ambivalence due to the high infant mortality rate, and/or a reduced willingness to spend time and energy on children.

Although double burials of Anglo-Saxon children are uncommon, Great Chesterford is an exception (Crawford 2007a) with more children than adults interred in multiple burials and mostly with other children. Three multiple burials, mass grave #83a-f and double graves #95a-b and #150a-b, were listed as 'disturbed bones', but the reasons for the disturbance are not discussed. Perhaps the act of reopening the grave to inter another individual disturbed the contents or maybe the disturbance happened during the excavation. Whatever the reason, the fact that large numbers of such graves belong to the very young is suggestive of differential mortuary treatment.

Lewis (2007 90) notes that clusters of infants have been interpreted as evidence for infanticide, suggesting grave #83, which contained six preterm individuals of 36-40 weeks gestation, as evidence, but it is difficult to entertain a definitive verdict for infanticide from the evidence for this burial. Evison (1994) suggests that the grave was marked and reopened when needed for the burial of a stillborn baby. It is possible that this grave was used by a single family or household, or even by one woman unable to carry children to full term. Each subsequent burial may have then disturbed the previous inhumation. Given that these multiple burials were not recognised until post-excavation it is difficult to know whether these and the other disturbed infant burials in the cemetery were caused by Anglo-Saxon burial practices or were a consequence of a hurried rescue excavation.

Despite the large numbers of disturbed infant burials, burial position clearly changes with age with most infants buried on their sides. Rather than seeing this as a form of indifference, we suggest that it may indicate a level of care, almost tenderness, in the placement of these very young individuals in their graves.

Non-Normative Burials

Throughout time and space, individuals have on occasions been buried in a way that marks them as different; these include prone burials, those without surviving grave inclusions, those buried with amuletic artefacts and burials containing large rocks. Children are the group most likely to receive non-normative treatment (Aspock 2008 20). Non-normative burials occur at Great Chesterford, and both children (32%) and infants (49%) were found more likely to have been given a non-normative burial than adults (20%).

The largest category of non-normative burial is interment without grave goods, and all except three of the non-normative infants were in this category (although some displayed other forms of difference as well). Fifteen children were buried with nails and/or hobnails, suggesting the presence of an object that has otherwise decomposed and although such burials are suggestive that graves may have contained other items that have not preserved, those buried without surviving grave

goods still deviate from the Anglo-Saxon norm. More children than others were buried with amuletic items, perhaps used to protect the child, rather than mark them as dangerous. The observation that more non-normative burials are those of children simply suggests they were treated differently to adults – it does not suggest reasons for this difference.

Grave Goods

The dearth of grave goods interred with children and infants in comparison to older individuals aligns Great Chesterford with other Anglo-Saxon cemeteries (Crawford 1999; Stoodley 1999). Subadults received the same types of goods as their older contemporaries, albeit fewer, and usually less prestigious types of brooches, necklaces and weapons. Only three infants had brooches (2) or weapons (1 spearhead; #99 see Table 3.5) but, with the exception of swords, shield bosses and sleeve clasps, the usual adult grave goods are represented in the infant graves. Contrary to Gowland's (2007b 59) finding that goods buried with Anglo-Saxon children less than four years old are usually 'gender neutral', the Great Chesterford infants and children were buried with gendered items as often as with neutral items; although a large proportion of children received no surviving grave goods. Neither children nor infants were treated significantly differently to older individuals in the deposition of pottery, suggesting that it was a universal grave good.

The situation regarding children and grave goods is complex. The first step for newly grieving Anglo-Saxon parents may have been to decide whether the deceased child should be afforded a cemetery burial, a step overwhelmingly taken at Great Chesterford (Lucy 1998 48). Then they needed to decide what, if any, grave goods should be deposited. Symbolism plays an important role in the masculine burial rite (Härke 1990), but it can be argued that all grave goods are symbolic, as they have no practical use (Lucy 1998), although this does not take into account beliefs held by the burying community regarding the use of these items in the afterlife. Artefacts were consciously selected for burial in the knowledge that this would mean their "death" (Crawford 2004) . It is possible that items, such as swords, were symbolic items in the

living world, however, as well as in the realm of the dead, meaning that the burial ritual did not remove useful items from the material world.

The burial ritual may also have functioned as an aid to forgetting (Williams 2005). The visible role of deposited grave goods may have been symbolic and/or for display, but the removal of items from the sphere of the living may have been used to eliminate reminders of the dead person from everyday life. Most grave goods appear to be personal items – jewellery, dress accessories, knives, and weapons – all reminders of the deceased and bereavement; the burial ritual not only provides a spectacle for congregated mourners, a final display to be remembered, but also removes symbols of loss from the everyday world while endowing the dead with their personal possessions. This means that low status is not necessarily the reason for the low numbers of grave goods deposited with the young. Young children, especially infants, have not created multiple relationships or established their individuality within the wider community. They also need little personal material culture – they have no tools of employment, no personal grooming equipment and few responsibilities. Infants are fed by their mothers, and have no need of showy adornments, although high status parents may endow their children with prestige items.

Crawford (1991 18) suggests that in the burial ritual, a child's individuality may be subsumed by the status of the family and thereby become a 'text' by which the associated adult status can be read, but children are not given high status goods to the extent that adults are. This suggests that only some children are considered suitable to represent their high status families, a representation downplayed or discounted, or that the highest status children are not displayed as such in the burial ritual. Alternatively, the child's individuality may be represented in the burial ritual.

Lucy (1998 48) notes that burials without gender-designating items are rarely analysed as they 'cannot be accommodated in the traditional bipolar way of thinking'. One problem with such analyses is the non-specificity of such items. The most popular gender neutral items for infants are the container, or miscellaneous

fragments of iron and nails. Containers may have contained food offerings, but it is difficult to infer meaning from fragments of rusty iron or to ascertain the use that nails were put to, other than to suggest that they are part of something almost completely decayed.

Gendered grave goods assemblages have reportedly been confirmed osteologically in most cases (Härke 1990; Stoodley 1999), although Lucy (1998 34) suggests that skeletal analyses of burials have been rarely carried out or published in original reports. Although some individuals from Anglo-Saxon cemeteries are buried with the 'wrong' grave goods no such conflicts were identified at Great Chesterford. Despite this strong gendering, it is possible gender is not actually being displayed in the infant burial ritual, and the grave goods simply reflect the need to provide the child with their possessions while removing them from the realm of the living.

Sex determination of the Great Chesterford children through their grave goods has resulted in numbers of males and females which differ markedly from those expected and without expensive DNA studies there is no way to confirm the patently skewed subadult sex ratio of 17 'females' to 3 'males'. The cemetery population is also made up of individuals with gender-neutral assemblages or no surviving goods (Lucy 1997). Regarding adults, while it is claimed that their sex determination on the basis of material culture is osteologically supported in 99% of case (Härke 1997), this approach is fraught with difficulties and gives rise to circular reasoning, while also surrendering to biases (Stoodley 1999; Lucy 1997). For subadults especially, sex determination through grave goods is highly problematic – we do not know how pre-pubescent Anglo-Saxon children or Anglo-Saxon infants were conceptualised, let alone gendered, and this is not the way to find out. The relationship between sex, gender and grave goods should be investigated rather than assumed.

Conclusions

We have sought to shine a light on the lived experience of Anglo-Saxon children, with an emphasis on infants less than two years of age. The children of the Anglo-Saxon

cemetery of Great Chesterford are uniquely placed to assist us as they, unlike most Anglo-Saxon children, were buried in their community cemetery.

The study of children in archaeological contexts is important because it is through children that a society is reproduced physically, culturally and socially. Childhood is more than biological age; it is a series of cultural and social episodes leading towards adulthood. Children are people, they are not things, not extensions of the adult world; they have thoughts, feelings, experiences, emotions, activities, spaces, material culture, negotiations, worldviews and lives of their own; they have agency; even the youngest infant is able to communicate through eye contact, movement and crying (Halcrow and Tayles 2008).

The large numbers of infant graves at Great Chesterford is a demonstration of the fragility of young lives, a fragility which would have been known and felt by the adult community. Great Chesterford parents buried their children in the cemetery, where they were able to express, disguise, deny or transform their feelings of sorrow or otherwise for their loss. The frequency of infant death may have affected attitudes; some parents may have gone through the motions to comply with community expectations, while for others the burial ritual may have been the expression of acute anguish. Nevertheless, the ritual must have had meaning for the community. Notwithstanding the multiplicity of possible emotional responses, the fact that these infants were buried in the neighbourhood cemetery suggests that they were considered worthy of burial and fit for inclusion among the adult dead. For some, this message conveyed all they needed to say or were capable of expressing; for others, the addition of grave goods was necessary.

Acknowledgements

This paper was made possible, in part, by an Australian Research Council Grant: FT 120100299.

Chapter 4 Chapter Four: Identification of the Invisible Elderly

I am invisible, understand, simply because people refuse to see me

(Ellison 1952)

In Chapter Three, the burial archaeology of Early Anglo-Saxon England was introduced through the prism of infants and children. This illustrated the burial practices of the time with a real example, in order to move on to examining the burials of older individuals. But who are these old individuals? How can we find them when taphonomy, osteological methodologies and current beliefs and attitudes render them invisible?

Chapter Four proposes an approach to identifying those invisible elderly. Firstly, reasons for this invisibility will be identified, and evidence of ancient elderly uncovered. Then evidence of an evolved lifespan for humans is discussed before a new approach to identifying the invisible elderly is proposed. This approach is illustrated with an Anglo-Saxon cemetery, Worthy Park, Kingsworthy Hampshire.

Publication Information

Identification of the Archaeological 'Invisible Elderly': An Approach Illustrated with an Anglo-Saxon Example. International Journal of Osteoarchaeology 26, 163-75.

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Current Status:

Accepted and Early Access 2014
Published February 2016

Declaration of authorship:

Composed overall question. Formulation of methodologies in manuscript; undertook background research, statistical analysis, discussion and conclusion.
Signed

Christine Cave

Refinement of arguments and methodology, contributed to overall question and methodology, argument formulation and editorial supervision of paper, rewrote sections of manuscript

Signed

Professor Marc Oxenham

NOTE ON PUBLISHED PAPERS

The text, tables and figures of the published paper comprise the rest of the chapter. The references will be found, with all other references, at the end of this thesis.

A PDF copy of the paper as published can be found in Appendix 2

IDENTIFICATION OF THE ARCHAEOLOGICAL 'INVISIBLE ELDERLY': AN APPROACH ILLUSTRATED WITH AN ANGLO-SAXON EXAMPLE

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Key words:

Age-at-death; mortality profiles; Worthy Park; old age

ABSTRACT

The aim of this paper is to present a method to facilitate age-at-death estimation of older individuals (generally those aged 50+ years) in a representative cemetery sample. The purpose of disaggregating catch-all categories, such as 50+ years, is to enable the exploration of the elderly (those in their 50s, 60s, 70s or 80s) in the context of mortuary archaeology, bioarchaeology and/or palaeopathology. The methodological steps include (1) assessment of occlusal tooth wear in an Anglo Saxon cemetery sample from Worthy Park, UK; (2) seriation of the sample, from relatively youngest to oldest, based on the degree of tooth wear; (3) selection of an ethnographically derived model (known mortality profile) by which seriated individuals in the Worthy Park sample could be reallocated to more realistic or appropriate age classes; (4) reallocation of individuals in the seriated Worthy Park sample to the model age classes. A Hadza, Tanzania, hunter-gatherer profile was chosen to model the Worthy Park sample, although others are available. Using this model, some 66% of the entire adult sample, originally allocated to the single final age category 45+ years, was distributed across four new age categories from the mid-40s to mid-70s. Relatively straightforward, this approach provides a way to identify those individuals, 50+ years old, not normally sensitive to traditional age-at-death estimation methodologies currently available.

ACKNOWLEDGEMENTS

Thank you to the Duckworth Laboratory, Cambridge and staff for access to the Worthy Park material and laboratory space in which to examine it.

This paper was made possible, in part, by an Australian Research Council Grant: FT 120100299.

> Jurgi was already twenty-five, she realised. Few people lived much beyond thirty; Sunta had been unusual in living to see her granddaughters grow up.
> Baxter (2010)

Fictional accounts of life and the lifespan of imaginary characters in Mesolithic Britain (see above), reflect popular views on human longevity in the past, views that are arguably based to a significant extent on academic palaeodemographic research. Misconceptions regarding prehistoric lifespans are partly founded on a misunderstanding of the term 'average age-at-death', as well as on systemic methodological problems associated with many skeletal age-at-death estimation methods, many of which tend to under-estimate true age in past populations. While skeletal biologists are aware that historical sources confirm people lived much longer than the evidence from their skeletons might suggest (Miles 2001; Boddington 1987; Cayton 1980), such recognition is often omitted.

There are many reasons for misconceptions regarding the elderly in the past (and while not ideal, the term 'elderly' is used in this paper to refer to individuals aged 50+ years). High childhood mortality reduces the average age-at-death of cemetery samples, while taphonomic processes can differentially affect mortality distributions. For instance, some skeletal age-indicators (e.g. the pubic symphysis) are less likely to survive in the skeletal tissues of the elderly, thus rendering them invisible in a demographic profile (Gowland 2007a). Errors in age-at-death estimation can also result from systematic methodological problems, and/or can be a function of the specific demographic reference population used to generate age estimation tables (Boddington 1987). One particularly significant factor is the poor correlation, in older adults, between traits used to estimate osteological (biological) age and calendar age (Boddington 1987).

Unlike subadult age estimation, which is essentially based on an assessment of osteological and dental signatures of growth and development, estimation of adult age-at-death is focused on skeletal and dental signs of degeneration, which are influenced by multiple factors including, but not exclusive to, activity, diet, disease

and genetics, at both the individual and population level (Aykroyd et al. 1999; Appleby 2010; Kemkes-Grottenthaler 2002; Roksandic and Armstrong 2011). As a consequence, the reliability of age-at-death estimation declines rapidly after the age of 45-50 years (Aykroyd et al. 1999). This reduction in accuracy is dramatically demonstrated by Molleson and colleagues (1993), who, using the well-regarded Complex Method (Acsádi and Nemeskéri 1970) on the Spitalfields sample of known age-at-death, aged less than 30% of the sample to within five years, half to within ten years, and three quarters to within fifteen years of their actual age. Even using broad age categories of immature, under 35 years, middle aged, and over 45, only 2% of individuals were over-aged, while 58% were under-aged (Molleson et al. 1993: 167). Such a significant bias has important implications for the age estimation of mature adults in any skeletal collection, with the prospect of entrenched underestimation of age-at-death in the elderly (Lucy 2005).

Another consequence of the various issues affecting age-at-death estimation flows from the age aggregation classes used, particularly the upper age category. Using Anglo-Saxon England as a case in point, at the cemeteries of Empingham, Tallington, Great Chesterford and West Heslerton the highest age category employed is 45+ (Timby 1996; Albone and Leahy 2000; Haughton and Powlesland 1999; Waldron 1994b); at Westgarth Gardens, Bury St Edmunds it is 50+ years (West 1988); while at Berinsfield the oldest category was further divided into two sub-categories, 40+ years, and 40++ years (Boyle and Dodd 1995), a practice which at least acknowledges that some mature individuals are older than others. The Anglo-Saxon cemetery at Worthy Park, Kingsworthy, Hampshire, has been provided with an oldest category of 50+ years, although one individual was aged 45-55 years (Wells et al. 2003).

If the oldest age category in a sample is determined to be 45+ years, as seen above, then it follows that the mean age-at-death will be significantly lower than 45 years (Cox 1999). While there may be good methodological reasons for such a low ‘minimum oldest age-at-death category’, the net result is a perpetuation in the belief that the mean age-at-death in the past was significantly lower than in modern populations. Bioarchaeologists produce demographic profiles which appear to

suggest that no individual lived longer than the age (or range) of the upper age bracket (Aykroyd et al. 1999); they do not deny the existence of such individuals, but instead render them invisible.

An illustration of the disparity between historical and skeletal sources comes from Cayton (1980), who studied historical texts to examine the longevity of a sample of 200 Anglo-Saxons (181 males, 19 females) consisting largely of kings, nobles and religious elites. Although recognising the limitations of ancient texts, Cayton compared the ages-at-death of individuals mentioned in the texts, to those of the skeletal population of Anglo-Saxon North Elmham (which may well have contained religious elites) (Wade-Martins and Yaxley 1980). The average age-at-death of the kings, nobles and bishops from historical sources was 57.7 years (range 18-68+ years), while the North Elmham cemetery's average age-at-death was estimated, through skeletal methods, at 37.9 years (range 18-48+ years). The difference is unlikely to be due to differences in status: the archaeological evidence suggests that the community of North Elmham was a prosperous one, with Cayton highlighting evidence from Russell (1966), who in examining English medieval demography found that the life expectancy of peasants and landholders during the period AD 1245-1347 was not significantly different. The Anglo-Saxon society of North Elmham showed narrower class distinctions than that in the later period, suggesting that if 'there was little differential mortality between social classes in the medieval period, there should certainly be none in Anglo-Saxon times' (Cayton 1980: 305).

Age-at-death estimation methods with relatively low upper limits also help to bring about the phenomenon of 'attraction to the middle', described by Masset (1989), where the age-at-death profile of a sample peaks at approximately 35 years (Gowland 2007a). This age allocation bias occurs due to the innate age-estimation error ranges regardless of the age estimation technique employed; errors which are assumed to cancel out with sufficiently large samples (Masset 1989). However, this assumption only holds true for middle age ranges, as the errors for the oldest and the youngest categories can only drift one way, towards the middle.

The use of rather low upper age classes (e.g. 45+ years) has long been accepted, with the result that it is often assumed that medical advances and improvements in nutrition and sanitation, which have undoubtedly reduced modern mortality rates, have also increased the human lifespan. Notwithstanding modern health care systems, in the past some individuals lived to be eighty, ninety or even a hundred, and although more people live to these ages today, few of us still survive much beyond a century (Hill 1993). It has also been shown that there is a great similarity between the population profiles of a range of pre-industrial groups, suggesting that there is a typical human demographic distribution (Gurven and Kaplan 2007; Paine 1989; Weiss 1973). It appears that humans have inbuilt schedules not only for growth and reproduction, but also for mortality (Hill 1993); these schedules are probably the result of evolutionary processes.

To assess the hypothesis that human 'mortality patterns, the timing and pace of development and senescence evolved during our hunter-gatherer past' and thus are part of a 'characteristic life span for our species', Gurven and Kaplan (2007: 321-322) examined the mortality profiles of modern hunter-gatherers and forager-horticulturalists. This dataset included 'all extant hunter-gatherers for which sufficient high-quality demographic data exist', and 'is the most complete set of preindustrial populations available' (Gurven and Kaplan 2007: 321-322). Because of the nature of global settlement patterns, these groups come from largely tropical areas, with some sub-tropical groups, while encompassing a wide geographic range including the Americas, Australia, Africa, Europe and Island South East Asia. They concluded that the 'modal age of adult death is about seven decades', after which people are more likely to die than live (Gurven and Kaplan 2007: 322). Our study relies on this assumption that, regardless of subsistence orientation, archaeological populations share similar demographic profiles, and thus provide a possible way to bypass the ceiling on maximum age-at-death estimation.

Many researchers believe that contemporary traditional societies provide a suitable template from which to infer skeletal profiles of ancient populations (see, for example, Hoppa 2002; Milner et al. 1989; Paine 1989; Weiss 1973; White 2014).

Because a cemetery population is likely to represent a specific community, with predictable demographic patterns, it should be able to be modelled using known population profiles, or profiles created using known demographic data, although it is necessary to make certain assumptions (for example stationary population, uniformitarianism) (Hoppa 2002). Scholars have often used the life tables of Coale and colleagues as models for their work (Coale and Demeny 1966; Coale et al. 1983). They themselves used data from both birth and death registrations and censuses from all areas of the world (although Europe is overrepresented to a large extent) to construct male and female model life tables, in order be able to estimate demographic parameters in difficult to assess populations (Coale and Demeny 1966; Coale et al. 1983). These tables are grouped into four 'geographical' regions called north, south, east and west, although these regions are not defined. The "west" regional table appears to be most popular for reconstructing the demography of traditional societies (e.g. Milner et al. 1989; Paine 1989; Weiss 1973).

Weiss (1973), who uses such a model, argues that many archaeological populations are too small or too poorly recorded to be demographically useful, and in addition, both demographic and census data of people over 55 years of age is unreliable. Because of such concerns, he developed model life tables with a variety of fertility and mortality rates to facilitate assessment of archaeological data, and to generate further demographic data (Weiss 1973). He explicitly ignores all individuals over 55 years of age (Weiss 1973: 12), and instead uses models based on Coale and Demeny's "west" tables (1966) to generate likely profiles in order to infer life expectancy, survivorship and mortality rates. Although his aims and methods differ to ours (and he was not specifically concerned with the identification of elderly individuals), Weiss does demonstrate that the use of models to simulate the older section of a population can be a useful approach.

Milner and colleagues (1989) also provide evidence that demographic profiles based on extant societies can be used to model archaeological populations. Specifically they seek to demonstrate that age-at-death data from extant traditional societies can be used to test inferences about demographic and cultural processes, including fertility

and mortality rates. They also use Coale and Demeny's "west" tables (1966), alongside birth and death rates from two well-studied traditional societies, to create their models; which are in turn compared to archaeological skeletal series. They do not venture beyond the upper age limit of 45+ years, and indeed their modelling method is a means of generating age-at-death schedules (rather than individual ages at death) as a first step in a process of exploring further demographic and possibly cultural trends. Nonetheless, their method suggests that the use of such models is appropriate for a range of purposes, including, by extension, extending the age-at-death for older individuals in a skeletal sample.

Paine (1989) also uses the "west" regression coefficients of Coale and Demeny (1966) to construct model life tables and population distributions. These are then compared to appropriate skeletal populations, using maximum likelihood estimation, to determine the best fit. This allows him to infer characteristics of the ancient population, including gross reproductive rate, crude birth rate and life expectancy. His analyses highlight 'the degree of fit between archaeological samples and typical human distributions' but, like many studies on ancient populations, the highest age category is 45+ years (Paine 1989: 60). He also notes that sample size in ancient populations often 'limits the potential for subgroup analyses' (Paine 1989: 60), a difficulty also relevant to our study when considering the differential effects of sex on tooth wear and subsequent age-at-death estimation.

More recently, White (2014) uses a computer generated ABM (or agent based model, in which agents represent hunter-gatherer individuals in a traditional society) to explore the ratio of old to young adults (the OY ratio). He does this to test the conclusions of Caspari and Lee (2004), who found a trend of increased survivorship in the evolution of four hominid groups from Australopithecines to modern humans, as well as to examine the ways in which the OY ratio reflects the mortality, fertility and mean adult age of a population. In this study, older adults are those above 30 years, so it is not examining extended longevity, although it supports the conclusions of Caspari and Lee (2004) who inferred an evolved dramatic increase in survivorship

in modern humans. As in the current study, White uses modelling to simulate demographic traits of past populations.

Palaeodemographic reconstructions of past populations are dependent on the accuracy of age-at-death distributions (Hoppa and Vaupel 2002: 3). 'The Rostock Manifesto' calls for more 'reliable and more vigorously validated age indicator stages as categories' as the first element in reconstructing demographic profiles of past populations (Hoppa and Vaupel 2002: 2). The second element has for the most part included a focus on Bayesian techniques to deal with the effects of age-estimation errors at the population level (Boldsen et al. 2002). Chamberlain (2006) provides a very useful summary of Bayesian approaches to age estimation. Briefly, Bayesian approaches seek to generate posterior probabilities of age that are weighted (the prior probabilities) using a range of techniques, one popular one of which is the use of ethnographically (or historically) derived model populations. An important point, in the context of our own aims, is that a set of probabilities that a given individual belongs to a series of age classes is provided, rather than a single age estimate. In other words, individuals are redistributed across an age (mortality) distribution in order to develop a more realistic demographic profile. Without doubt, such approaches have enormous value at the population level, but cannot be used to disaggregate age classes, or more importantly, identify specific (elderly) individuals.

The aim of this paper is quite different to previous work in this field, in as much as we wish to present a method to allow the identification of older individuals (generally those aged 50+ years) in a representative cemetery sample. The purpose of disaggregating catch-all categories, such as 50+ years, is to facilitate the exploration of the elderly (those in their 50s, 60s, 70s or 80s) in the context of mortuary archaeology, bioarchaeology and/or palaeopathology. Studies examining the differential effects of biological and/or social realities of the lives of people in the past allow us to glimpse otherwise bio-socially invisible facets of the lived past. In the Anglo-Saxon literature, scholars have examined traits such as gender (see, for example, Lucy 1997; Stoodley 1999), childhood (Crawford 1991; 1999; Stoodley 2000), and social identity (Härke 1990; 1997; Lucy 2010; Sayer 2013), in the context

of biological sex, age and social status. Although some work has been done on the social effects of ageing itself (for example Crawford (2007b), who had to rely on historical sources to augment the slim pickings of cemetery or skeletal data), the aggregation of skeletons into catch-all categories (e.g., 50+ years) makes differentiating between say, a healthy, active person of 50 and a mobility-challenged 80 year old very difficult, although the abilities, activities and societal perceptions of these two people are widely different. Similar limitations apply in the areas of bioarchaeology and palaeopathology. The proposed approach to disaggregating catch-all oldest age categories in cemetery samples provides the opportunity to study what is currently a bioarchaeologically invisible demographic cohort. The method is illustrated with reference to an Anglo-Saxon cemetery sample from Worthy Park, Kingsworthy, near Winchester, Hampshire in the UK (Hawkes and Grainger 2003).

Methods and Materials

A total of 59, of the 105 individuals originally reported, from the Anglo-Saxon cemetery site of Worthy Park, Kingsworthy, near Winchester, Hampshire in the United Kingdom were examined and assessed for occlusal tooth wear. Human remains from the site, excavated in 1961 and 1962, were originally curated at the Duckworth Laboratory in Cambridge by specialist technician Bernard Denston (Hawkes and Wells 1983). While Denston restored, photographed and recorded a range of data on the collection, portions of the collection were shipped to the British Museum (Natural History) in London by Don Brothwell and a final report was not published. The well-known British palaeopathologist Calvin Wells examined the human remains in the 1970s, with a report (which includes age-at-death estimations, albeit without any reference to the methods used) posthumously authored by him more than two decades after his death (Wells et al. 2003).

The Worthy Park cemetery was in use for a maximum of two centuries, from the middle of the fifth to the middle of the seventh century AD (Hawkes and Grainger 2003). The excavators estimate that the associated settlement could have held approximately forty individuals at any one time, although this calculation is based on

an average life-span of 28 years (Hawkes and Grainger 2003). The inhabitants most likely lived in small farmsteads and practised mixed farming at a subsistence level, with a diet that probably consisted of fresh and dried meat and fish, nuts, fruit, as well as grains (barley and rye) ground by hand in stone querns for making bread (Hawkes and Grainger 2003: 882; Lucy et al. 2009; Miles 1962). Anglo-Saxon settlement evidence suggests that individuals lived and worked side by side in mixed social groups with narrow distinctions between rich and poor (Härke 1997; Cayton 1980)

The methodological approach is based on the principle that occlusal tooth wear is significantly correlated with age, and that a sampled population can be seriated from relatively youngest to relatively oldest based on the degree of tooth wear (e.g. Lovejoy et al. 1985; Walker et al. 1991). Lovejoy and colleagues (1985) found that dental wear is the best single variable for determining age-at-death in skeletal populations, as it is consistently without bias and has relatively high accuracy. Its usefulness is based on the observation that wear of the teeth is continuous throughout life, unidirectional and occurs at a similar rate in individuals exposed to food stuffs of comparable toughness and abrasiveness (Miles 1962). One advantage of using tooth wear for age seriation is that the standards are established within the population being analysed (Lovejoy et al. 1985). Wear is most regular on the first and second molars, while the third molar is less reliable due to its variability in form and the time it takes to reach full occlusion, if it does at all (Mays 2010: 57). Consequently, this study uses only the first two molars for wear assessments. Dental wear analysis is a valuable tool for age-at-death estimation (Walker et al. 1991; Lovejoy et al. 1985), while at the same time being highly sample or population, specific (Aykroyd et al. 1999; Miles 2001; Walker et al. 1991).

The practice of seriating age estimation traits is not new. Lovejoy and colleagues (1985) note that seriation reduces observer error and is useful for age estimation purposes. Our approach is similar to Lovejoy et al. (1985) in that it relies on a community sample and comparison between cases to fine tune age-at-death estimation. Unlike the method of Lovejoy and colleagues, our technique is suitable

for use on populations with poor preservation, as long as teeth have survived. We use known demographic profiles to generate models to infer ages for skeletons that osteologists are unable to age beyond 45+ years. We have chosen to apply a series of categorical age classes (i.e. 45-55 years etc.) as we (obviously) cannot independently verify the age-at-death of individual cases from an unmarked Anglo-Saxon cemetery. Nonetheless, we consider such classes to be more useful than 'catch-all' categories like 50+, especially for the purpose of further studying age related bio-social variation.

A possible source of error (for any age indicator) is sexual dimorphism in tooth wear. Various studies have shown differences in rate of wear due to sex (see, for example, Da-Gloria and Larsen 2014), usually with females exhibiting higher wear rates, or no differences in wear rates due to sex (Lovejoy 1985). Ideally, the development of sex-specific wear models is preferred. Unfortunately, this could not be done due to reduced sample size effects (Paine 1989).

The methodological steps include (1) assessment of occlusal tooth wear using Scott's (1979) four quadrant method; (2) seriation of the sample based on degree of tooth wear; (3) selection of a model(s) by which seriated individuals in the Worthy Park sample could be reallocated to more realistic or appropriate age classes; (4) reallocation of individuals in the seriated Worthy Park sample to the model age classes. These steps are detailed below.

Assessment of Occlusal wear

The surface of every complete first and second molar of each assessable individual was divided visually into four equal quadrants, each of which were scored separately using the methodology outlined by Scott (1979). Average M1 and average M2 wear scores were calculated for each individual, where a minimum of at least one M1 and/or one M2 was required for any single individual. Functions (using least squares regression) were also developed in order to estimate M1 average wear where only M2 wear values were present for a given individual, and vice versa. While edentulous individuals were not encountered in this study, they can be included in this sort of

seriation. Where edentulism is entirely antemortem, such cases could be placed at the "oldest" end of the seriation. Where tooth loss is post-mortem (this could also be carried out with antemortem cases), seriation of the sample would also need to include other independent methods of age-at-death estimation if such cases were to be included in the study sample.

Seriation

Using the average M1 and M2 dental wear calculated for each individual, the sample was seriated from least to most dentally worn. The original age-at-death estimates established by Wells et al. (2003) were compared to the seriated values, with special attention paid to any inconsistencies. Any marked deviation from original age-at-death estimates by Wells et al. (2003) and relative age-at-death by occlusal tooth wear seriation were noted and reconciled if possible.

Development of an appropriate mortality model

The next step was to find a more realistic population mortality profile (the model) to apply to an Anglo-Saxon cemetery like Worthy Park. Gurven and Kaplan (2007) examined mortality profiles for 21 groups of recent hunter gatherers, forager horticulturalists and acculturated forager horticulturalists, as well as a cohort from 18th century Sweden. Although they found some level of differential mortality among these disparate samples, these were small and they concluded that "similarity in mortality profiles of traditional peoples living in varying environments is impressive" (Gurven and Kaplan 2007: 322). Weiss (1973: 42) also notes that 'the great demographic similarity between pre-industrial populations is quite convincing' and Paine (1989: 60) highlights 'the degree of fit between archaeological samples and typical human distributions'. In light of these findings, it would appear that the choice of model is not a fundamentally important issue. Nonetheless, it is worth noting that while Worthy Park inhabitants were neither hunter-gatherers nor forager horticulturalists, they were pre-industrial farmers, lived in small farmsteads and lacked access to modern medical intervention, drugs, nutrition and sanitation.

For the purposes of this paper, both a Hadza (n = 125) hunter-gatherer (Blurton Jones et al. 2002) and an 18th century Swedish horticulturalist (n=100,004) (Sundbärg 1906) mortality profile were initially assessed for the purposes of providing a model for the Worthy Park sample. They were chosen because their mortality profiles are similar to that of Worthy Park when constructed using the same age classes. The Hadza model would appear to be a more 'primitive' model, thus closer in that aspect to that of Sweden; however, the lifestyle of the Swedes is more likely to be close to that of the Anglo-Saxons. In fact, both profiles are remarkably similar, supporting the view of the general 'typicality' of pre-modern demographic profiles.

As it can be assumed individuals aged 15 years or younger can be more accurately aged using osteological criteria sensitive to developmental changes over childhood, truncated mortality profiles starting at 15+ years were used to model the Worthy Park sample. For the Hadza sample, 88 individuals were aged 15+ years old at death, while for the Swedish sample 61,421 were aged 15+ years old at death. For each of these samples the proportion of individuals in each ten-year age category was calculated, up to a final age category of 75+ years. The highest originally reported age category for the Hadza sample was 75+ years, while for the Swedish sample it was 105+ years, with approximately 4.5% of the entire sample aged 85+ years.

Re-allocation of the Worthy Park sample to an appropriate mortality model

The proportion of individuals occurring in each of the ten-year age classes for the Hadza and Swedish samples was used to reallocate individuals from the seriated Worthy Park sample. For instance, 15/88 (17.05%) Hadza were aged 15-25 years (the youngest age category), which equates to 6.99/41 (17.05%) or approximately seven Worthy Park individuals. In this case, the seven individuals with the lowest wear scores were allocated to this age class. The same process was used to reallocate all Worthy Park individuals to both the Hadza and Swedish models.

RESULTS

Anglo-Saxon Worthy Park Mortality Profile

Figure 4.1 shows the complete mortality distribution (n=91) for Anglo-Saxon Worthy Park using, as near as practically possible, the age-at-death estimations of Wells et al. (2003). The Hadza and 18th century Swedish samples are provided for comparison. Figure 4.2 shows the effect of using the Worthy Park age categories to re-package both the Hadza and Swedish populations, in this instance using truncated profiles, with the youngest age class set at 15-25 years for each of the three populations. Figure 4.3 replicates Figure 4.1, but using the truncated age distributions. Note the low proportion of Worthy Park subadults, not uncommon in Anglo-Saxon cemetery samples, in Figure 4.1 and the high proportion of Worthy Park individuals aged 45+ years in both Figures 4.1 and 4.3. It is also worth pointing out the close similarity between the Hadza and Swedish mortality distributions for adult age classes (see especially Figure 4.3). Nonetheless, it can be seen that the Swedish sample has a smaller proportion of individuals aged 15-25 years, and a greater proportion aged 75+ years, than the Hadza sample. Part of the reason for a higher proportion of 75+ in the Swedish sample is that 75+ years is an aggregate of several post-75 years age categories, up to age 105+, in this sample. The reason for the elevated proportion of Hadza individuals in the 15-24 year age category is unclear, although informants reported that 5 individuals in this age class were females that died in childbirth. Elevated levels of young female mortality in preindustrial populations, both past and current, is often ascribed to risks associated with pregnancy and childbirth (Willis and Oxenham 2013a). While we advocate for the presence of typical pre-industrial demographic profiles, there is still choice in the use of models. In this instance we have chosen the Hadza model as the most appropriate sample to represent Anglo-Saxon Worthy Park due to the similarity between these two populations with respect to the subadult to adult ratio. Indeed, the $_{15}P_5$ ratio (see Bocquet-Appel and Naji 2006), is quite similar for the Worthy Park and Hadza populations (0.22 and 0.27 respectively), whereas the Swedish sample is relatively quite low (0.12). Whatever model is chosen, and there are many available, the process of allocating individuals from the archaeological sample of interest is the same as outlined here.

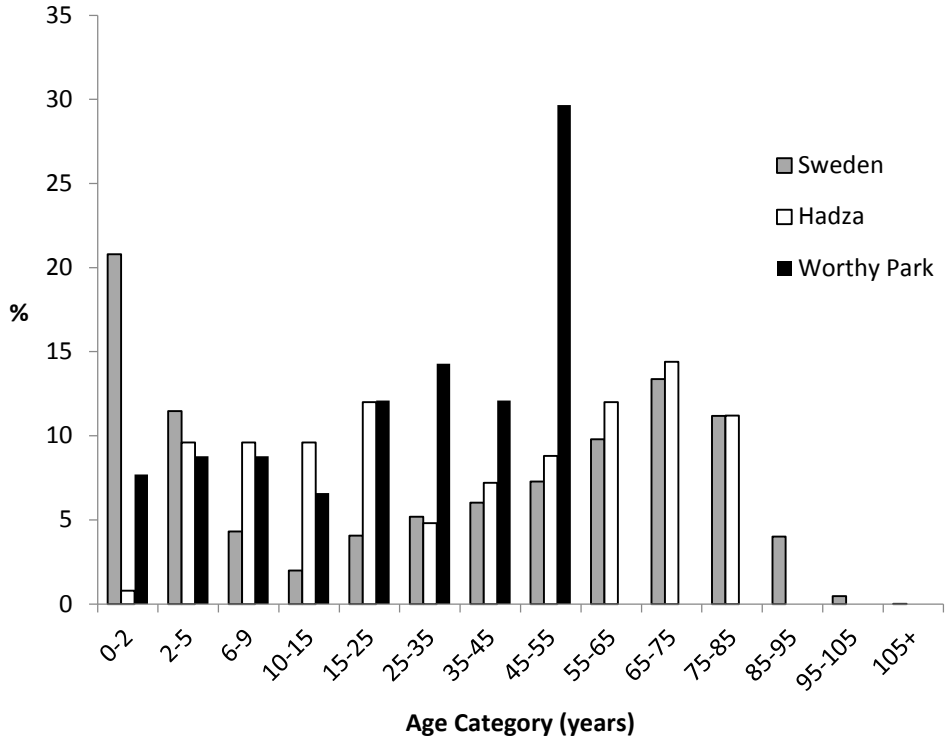

Figure 4-1 Complete mortality profiles: Worthy Park n = 91 (Wells et al. 2003); 18th century Sweden n = 100,004 (Sundbärg 1906); Hadza n = 125 (Blurton Jones et al. 2002)

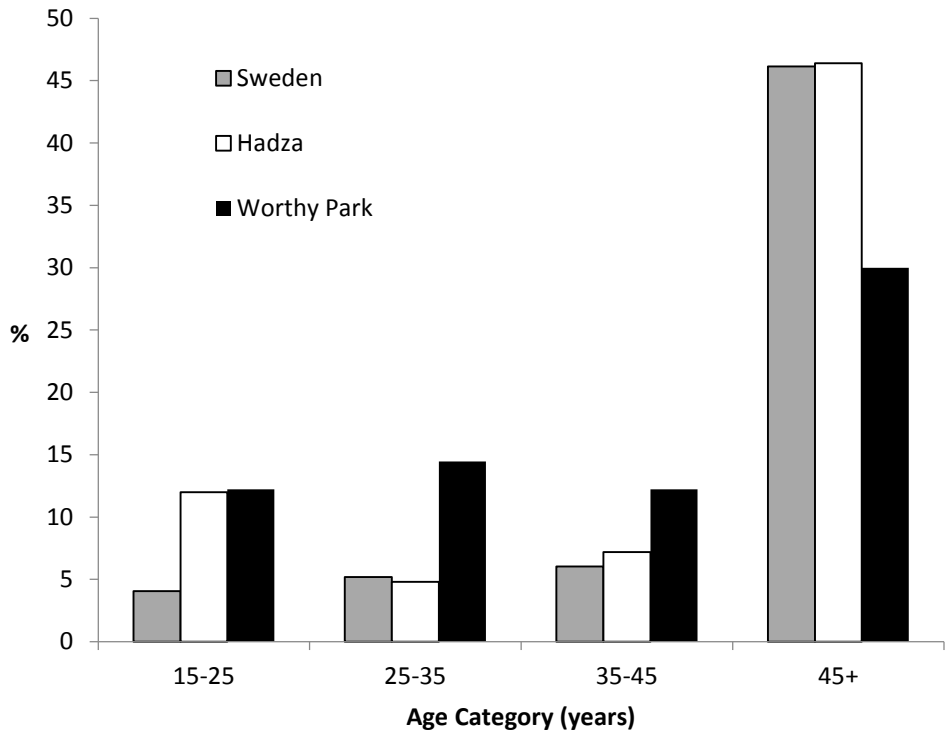

Figure 4-2 Truncated (excludes subadults aged less than 15 years) mortality profiles fitted to the Worthy Park age categories

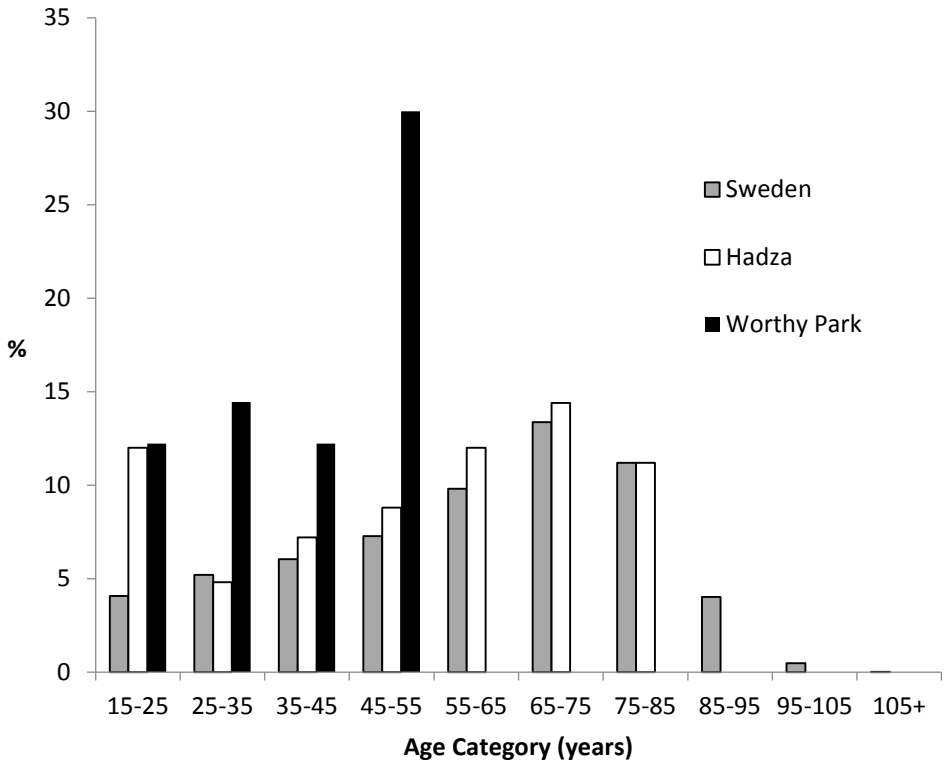

Figure 4-3 Truncated mortality profiles: Worthy Park n = 44; 18th century Sweden n = 61,421; Hadza n = 88

Of the total available sample, occlusal tooth wear could be assessed for 48/76 individuals aged from as young as 6 years (when the first molar generally erupts). A total of 39/48 individuals had both first and second molars that could be assessed for occlusal tooth wear. These 39 cases were used to develop functions to estimate M1 wear where only M2 wear was available and vice versa. Regressing M1 on M2 tooth wear, in order to estimate M1 tooth wear, provided a significant (F 227.69, p=0.000) correlation (r^2 0.86) and relatively small standard error of estimate (M1 wear = M2 x 0.927 + 2.0510 +/-0.6902). Regressing M2 on M1 tooth wear provides the following function for estimating M2 wear: M2 wear = M1 x 0.927 - 1.3836 +/-0.7485. These functions allowed the estimation of M1 wear in an additional two cases and M2 wear in seven cases to provide average M1 and M2 tooth wear scores for a total of 48 individuals.

Of the 48 Worthy Park individuals able to be seriated based on dental wear scores, seven were excluded from further analysis as they were aged less than 15 years old. Figure 4.4 shows the results of the Worthy Park sample reallocated to the truncated Hadza model based on tooth wear seriation. The actual number of Worthy Park individuals allocated to each of the model's age classes is given above each bar in the figure. Overall, there is good agreement between the original Wells age estimates and the seriated sample (see Table 4.1). Of the 27/41 individuals allocated to age categories 45+ years, only five (18.5%) were originally assessed by Wells et al. (2003) as being potentially less than 45 years old. Moreover, two of these five individuals have rather ambiguous age estimates of 30+ years. Of the 14/41 individuals allocated to age categories below 45 years, 3/14 have been assigned to age classes seemingly inconsistent with Wells et al.'s (2003) estimates: two cases aged 50+ years have been assigned to 23-35 years and one aged 30-40 years has been assigned to 15-25 years. In all three instances it is unclear, from the level of preservation and the skeletal elements present, how age-at-death estimates could originally have been carried out. Without recourse to the original material available and specific methods used to estimate the age of each individual by Wells et al. (2003), it is not possible to reassess these cases.

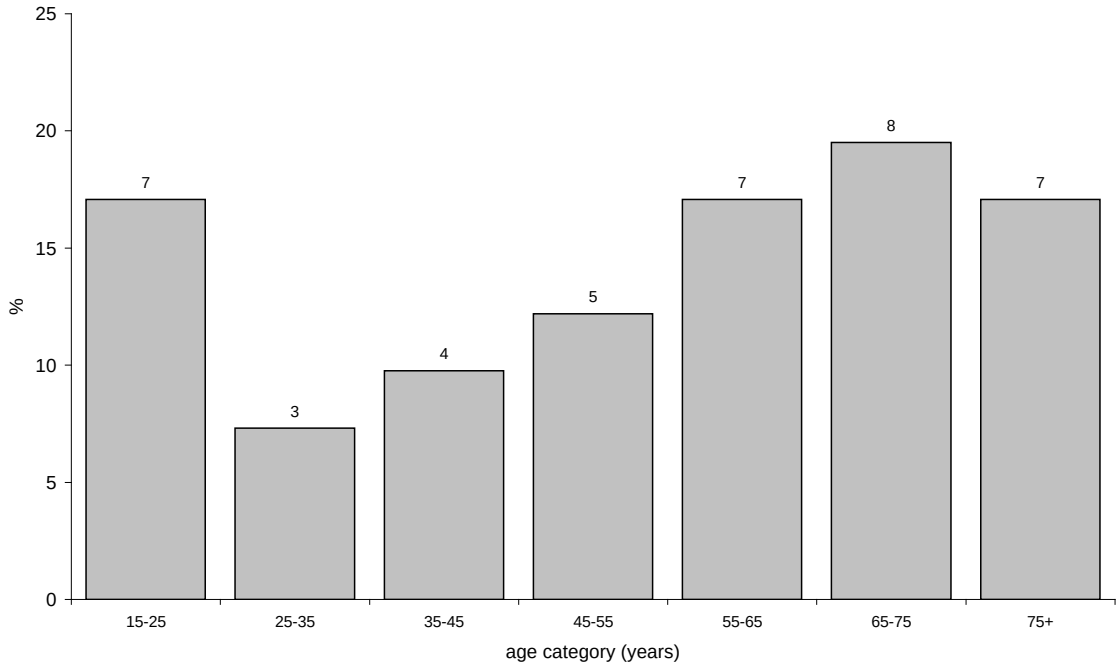

Figure 4-4 Worthy Park seriated sample (n = 41) fitted to the Hadza model. Bar labels refer to the number of Worthy Park individuals reallocated to each age class

Table 4-1 Comparison of New Age Class Allocations to Wells' Original Age Classes

New Age Class	Burial #	wear Score	Wells' Age	New Age Class	Burial #	Wear Score	Wells' Age
75-85	49	9	50+	45-54	38	5.06	25-35
	42a	8.75	40+		13	4.93	30+
	39	8.69	40-50		80	4.88	50
	50	8.38	40-50		17b	4.81	30-40
	77	8.38	40-50		61	4.75	30-35
	63	7.66	45	35-44	85	4.73	25-35
	72	7.54	45-55		10	4.56	adult
65-74	20	7.17	50+		53	4.53	25
	41	6.97	50+		60	4.44	24-25
	3	6.93	50+	25-34	27*	4.38	50+
	12	6.88	50+		32*	4.19	50+
	36	6.71	30-40		34	4.19	30-40
	11	6.69	adult	15-24	81	4	18-30
	16a	6.44	40-50		33*	3.98	30-40
	30	6.44	adult		22	3.79	25-30
55-64	2	6.38	50+		45	3.61	18-30
	14	6.19	40+		84	3.31	18-20
	90	6	35-45		18a	3.28	21-25
	9	5.94	30+		71	3.03	16-17
	24	5.78	35-45				
	18c	5.36	40-50				
	93	5.13	30+				

* cases with low tooth wear scores relative to Well's age-at-death estimation

Discussion

The approach outlined in this study provides a way in which to disaggregate the 45+ and 50+ final age categories often used in bioarchaeological mortality profiles. The method involves modelling an archaeological population of interest on an appropriate known mortality profile, with a number of hunter-gatherer and pre-industrial mortality distributions available.

The value of the approach we have outlined is based on two assumptions: (1) there is a demonstrable relationship between tooth wear and age-at-death; and (2) known pre-industrial mortality profiles can meaningfully be used to model age-at-death distributions in archaeological samples. With respect to the first issue, there are a number of studies that have fruitfully employed various systems of tooth wear analysis in estimating age-at-death in archaeological and recent samples. Miles' (1963, see also; 2001) is perhaps the best known, and successfully tested (Kieser et al. 1983; Nowell 1978) method for estimating age-at-death from tooth wear. Recent work (e.g. Millard and Gowland 2002) has attempted to increase both the accuracy of such approaches, as well as deal with the issue of systematic underestimation of age in the older age class using Bayesian statistical approaches. Moreover, Bayesian methods have been employed in estimating age-at-death in recent forensic cemetery populations, albeit with less certainty due to the confounding effects of heterogeneity in individual dental wear with multi-origin samples (Prince et al. 2008).

Indeed, others have noted the issue of interpersonal heterogeneity in tooth wear rates, and suggested tooth wear records factors other than age-at-death (Boldsen 2005). However, the broad temporal span of the cemetery (c. 200 years) Boldsen (2005) analysed, with the likelihood of variability in diet by temporal phase, in addition to unknown, but more than likely, differential social status (and by proxy diet) in the sample were the major contributors to the observed heterogeneity. If such issues could be controlled for, the correlation between dental wear and age-at-death would presumably improve. On balance, there appears to be good evidence for a strong association between the degree of dental wear and individual age-at-

death in pre-industrial populations in particular, and even in some modern populations (e.g. Prince et al. 2008).

Where this study differs from others that have used dental wear to explore age-at-death, is that we are not concerned with establishing wear trajectories in known-age subsamples (e.g. see Miles 1963; Millard and Gowland 2002) in order to predict age in unknown cases. On the assumption, which appears valid, that increasing levels of tooth wear is positively correlated with increasing age-at-death, we use tooth wear to simply seriate individuals in an archaeological sample (Worthy Park) from least dentally worn to most dentally worn. Tooth wear, in and of itself, is not used to estimate the age-at-death of any individuals in the Worthy Park sample. Nonetheless, we do assume that, by and large, whatever the actual underlying age structure of the sample, our seriation will reflect the relative age of each individual.

Further evidence for the correlation between age-at-death and tooth wear can be seen where the seriated sample is consistent, for the most part, with the independent age-at-death estimates made by Wells et al. (2003) (Table 4.1 above). Ideally, it would be useful to test this method on a population of known age-at-death. However, the majority of known age-at-death samples are not made up of a single homogenous 'community' with similar food and chewing practices, as an ancient cemetery sample is likely to be (Lovejoy et al. 1985; Boldsen 2005). This issue of non-homogeneity can be seen in Prince and colleagues' (2008) study which applied a Bayesian statistical method, transition analysis, based on the Gompertz-Makeham hazard model, to estimate ages at death of a dataset of modern Balkans individuals of known ages. Although they found an overall trend of tooth wear increasing with age, the age ranges associated with each tooth wear phase were extremely wide, ranging from 44 years (17-61 years in phase 1) to 71 years (17-88 years, Phase V). Their study was hampered not only by limited access to one single rooted tooth from each individual (no molars, which exhibit the most reliable wear (Mays 2010)), but also by the nature of their dataset: while all subjects came from the Balkans, they did not belong to a single population accessing similar food and living in similar environments, as would be the case in an archaeological cemetery population. As

dental attrition is population specific, the use of modern datasets as reference collections of known age-at-death is problematic in a study of dental attrition. Finally, while not attempted here, the seriation can potentially be calibrated against independent age-at-death indicators (e.g. see Lovejoy 1985; Nowell 1978), although the lack of any generally accepted age-estimation signatures for individuals aged 50+ years means that older individuals cannot be calibrated in such a manner.

Turning to the second issue highlighted above, assigning individuals from the Worthy Park sample to age classes involved the employment of an appropriate pre-industrial mortality profile, where the individual ages-at-death were known with certainty. Gurven and Kaplan (2007) note that the 21 populations they studied, which included hunter-gathers, forager horticulturalists, acculturated foragers and even a large 18th century Swedish sample, demonstrated a great deal of similarity in mortality profiles. Moreover, they conclude that the modal age of death, regardless of subsistence orientation, environment or time period, is approximately 70 years. This provides a robust basis of support for the use of derived mortality profiles for modelling age-at-death profiles in archaeological samples.

While the use of a typical ethnographically or historically derived demographic model would seem to be the best approach, the bioarchaeological context of any given cemetery sample may need to be considered when selecting the most appropriate basis from which to fit a model mortality distribution, where the chief aim is to disaggregate the concentration of older individuals in a sample. In some instances, bioarchaeological evidence for intense interpersonal conflict (e.g. warfare), or high levels of infectious disease (e.g. mortality peaks in young adults), will mitigate against the use of a generalised traditional forager or agriculturalist model, and other, more appropriate, models will need to be sought. In the case of Worthy Park, the bioarchaeological evidence points to a relatively typical (no evidence for undue levels of mortality due to violence or infectious disease) population, potentially not dissimilar to a modern forager profile, such as the Hadza. Indeed, there is little difference between the Hadza profile and that of an 18th century Swedish agriculturalist profile (Gurven and Kaplan 2007). We have selected the Hadza as an

appropriate model simply for the purposes of illustrating our methodological approach, although the ratio of subadults to adults ($_{15}P_5$ ratio) was more similar to Worthy Park than the Swedish sample. Moreover, as discussed previously, there is good evidence that the Hadza profile represents a 'typical' demographic profile for pre-modern societies, somewhat obviating the need to select between demographic models.

Clearly, mapping two or more seriated archaeological samples on a particular known ethnographically derived mortality distribution will produce identically shaped mortality profiles. However, we are not concerned here with comparing and contrasting mortality profiles (something Bayesian approaches are designed to facilitate), and indeed, cannot do so with this particular methodological approach. The chief purpose of this method is to disaggregate those individuals traditionally lumped into the catch-all category of 45+ or 50+ years. Indeed, we wish to isolate individuals of advanced age (those in their sixties, seventies, eighties or older) who cannot be effectively aged using conventional methods. Once identified, or rendered bioarchaeologically visible, one is then free to explore a range of social, cultural and biological aspects of ageing.

Conclusions

The difficulties of estimating the age-at-death of older individuals have contributed to the unrealistic impression that no one lived to a grand old age in the distant past. High childhood mortality, taphonomic issues, inappropriate reference populations, the age brackets themselves, 'attraction to the middle' and the inbuilt inaccuracies of age estimation techniques, especially in the older age categories, have all contributed to the invisibility of older individuals in the archaeological record.

The purpose of this paper has been to provide an alternative method for disaggregating those individuals in an archaeological assemblage that end up populating the final age class in a mortuary profile, the 45+ and 50+ cases. Assuming a modal age of death of around 70 years in both past and recent populations, and given that there will be those that lived into their 80s, if not older, in antiquity, our

failure to identify these individuals has stifled efforts to establish a bioarchaeology of the elderly.

Our methodological approach makes two major assumptions, the first being that there is a positive correlation between increasing levels of tooth wear and increasing age. Considerable support in the literature for the value of tooth wear in exploring age-at-death, provides a reasonable basis for the use of scoring tooth wear in order to seriate archaeological samples from relatively youngest to relatively oldest. Calibration of this relative seriation using independent age-at-death indicators can be employed, albeit with a less useful effect on older individuals. The second assumption, that ethnographically or historically derived pre-industrial mortality profiles (based on actual age-at-death determinations, rather than demographic modelling) are for the most part quite similar in shape, when not subject to elevated risks of death from violence or infectious disease, also appears to be robust. The similarity in a range of mortality profiles, from foragers through to 18th century agriculturalists, suggests they can be used to model seriated archaeological samples for the purpose of identifying individuals in their 50s, 60, 70s and even 80s.

The bioarchaeology of the elderly is perhaps one of the least explored sub-disciplines of biological anthropology and mortuary archaeology. It is not through a lack of interest in the biology and sociology of age-at-death estimation in the past, but rather, through a dearth of appropriate and testable methods for identifying the aged in cemetery samples that has stalled research in this area. It is clear that an increasing amount of work is progressing our ability to see the elderly, with Bayesian approaches receiving the most attention lately. It is hoped that our take on this problem will contribute to the developing research interest into those that lived to a ripe old age in antiquity.

Chapter 5 Chapter Five: Insights into the experiences of the elderly in Early Anglo-Saxon England

Age is nothing but experience, and some of us are more experienced than others
(ROONEY 1995)

In Chapter Four, an approach to identifying the invisible elderly was proposed. This method enables individuals in an archaeologically invisible cohort to be identified and thus made visible. With elderly individuals identified, it becomes possible for them, their graves and thus their lives, to be examined and explored in detail. In Chapter Five, the experiences of the elderly in three Early Anglo-Saxon cemeteries are examined through aspects of their graves and grave goods. The burials of all individuals identified as being over 65 years are compared to those younger – the middle-aged, young adults and non-adults using both quantitative and qualitative analyses. Such an approach provides rare insights into the lives and experiences of a hitherto invisible group of individuals.

Publication Information

Insights into the experiences of the elderly in Early Anglo-Saxon England; unpublished

Authors

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Current Status:

Under review

Declaration of authorship:

Formulation of arguments in manuscript; composed overall question, background research, statistical analysis, discussion and conclusion.

Signed

Christine Cave

Refinement of arguments, contributed to overall question and methodology, argument formulation and editorial supervision of paper, rewrote sections of manuscript

Signed

Professor Marc Oxenham

NOTE ON UNPUBLISHED PAPERS

This paper has not yet been published. All text, figures, tables and captions are included in this chapter. References can be found at the end of the thesis.

INSIGHTS INTO THE EXPERIENCES OF THE ELDERLY IN EARLY ANGLO-SAXON ENGLAND

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Introduction

When inferring the lived experience of the dead, it is an underlying premise that the way in which they were buried by the living, including grave architecture, burial treatment and grave (goods) inclusions, reflects a combination of the deceased's own perception of self and the mourner's view and understanding of the identity of this individual while alive. Indeed, "the material goods buried with the dead are tangible incarnations of social relationships embodying the attitudes and behaviour of the past" (Reiter 2014: 1l8, citing Beaudry et. al 1991; Halsall 1996).

Many archaeological studies have been carried out investigating cultural individualities within past societies. For Anglo-Saxon England, children (Crawford 1991), women (Lucy 1997), warriors (Härke 1990; 1992) gender (Stoodley 1999), age identity (Gowland 2006), masculinity (Gilchrist 2009a) and the marginalized (Reynolds 2009) have all been examined. Although they are largely neglected in archaeological study (Appleby 2010), the lives of the elderly have also been explored (Crawford 2007b). Crawford (2007b: 59) used literary texts to support limited archaeological data to infer that "old people were idealized and venerated in Anglo-Saxon society". However, contemporaneous texts largely focus on elite males, marginalising women and common people (Hills 2011). In addition, the texts Crawford cites derive from Christian, rather than Pagan Anglo-Saxon England. Although these writings contain the closest parallels chronologically and geographically to the early Anglo-Saxon culture (Crawford (2007a: 86), this evidence was composed at a later date and under the influence of a new religion — one which brought major changes to English life (Brush 1988). Changes include the end of

furnished burial, literacy and the move from a relatively unstratified society toward the creation of Anglo-Saxon kingdoms (Welch 2011; Härke 1997).

One cultural aspect which may have affected perceptions of age is sex, and its close relative, gender. Bioarchaeologically, sex generally refers to the biological sex (based on skeletal morphology) of an individual, while gender relates to a socio-cultural category identified by the individual or community. In archaeology, gender is usually inferred through material culture, often grave goods, while sex is estimated (rather than determined) through the skeleton; while there is a tension between these two aspects (see Sofaer 2006), inferences can be made about the individual and the society. Anglo-Saxon funerary archaeology demonstrates that this was a strongly gendered society, with weapons associated largely with sexed males and dress accessories/jewellery associated with sexed females (Stoodley 1999). Nevertheless, these categories only define perhaps half the burials, with the remainder buried with no surviving goods or those found with individuals of either sex (Lucy 1997).

Confounding factors aside, attempts to examine the nature of old age in the past using archaeological methods have been fraught due to the difficulties associated with identifying who exactly was very old and how old they were (Cave and Oxenham 2016). The aim of this paper is to tackle the issue of identifying the elderly head on and to explore the experience of old age, including the way in which the elderly interacted with younger cohorts, in Early Anglo-Saxon England (*c.* AD 450 to 650). To address these objectives, we examine, compare and contrast data from the burials of all aged individuals from three good-sized, well-excavated Anglo-Saxon cemeteries.

Materials and methods

Three Early Anglo-Saxon cemeteries were included in this study, encompassing the migration period up into the final phase, from the mid-fifth to the early seventh century AD. They are Mill Hill, Deal, Kent; Great Chesterford, Essex; and Worthy Park Kingsworthy, Hampshire (Evison 1994; Hawkes and Grainger 2003; Parfitt and Brugmann 1997).

Mill Hill, Deal, Kent was excavated 1986-1989 by the Dover Archaeological Group led by Keith Parfitt (Parfitt and Brugmann 1997: 1) ahead of digging for the construction of housing estates. Although it was a rescue excavation, the whole cemetery was excavated, with the 76 graves arranged around an Iron Age ring ditch and probable barrow (Parfitt and Brugmann 1997). The cemetery was dated to approximately AD 500-590 (Parfitt and Brugmann 1997: 100); in addition, Hines and Bayliss (2013) examined nine later graves in the context of their work on Anglo-Saxon chronology (which included radio carbon dating); their findings did not differ greatly from those of the original report.

Great Chesterford, Essex, was also a rescue excavation, carried out between 1952 and 1955 by Vera Evison, with 160 graves and 33 cremations identified. It was not possible to completely excavate the cemetery, with an estimated 100 graves lost due to gravel digging (Evison 1994: 1). The cemetery was dated to AD 450-600 and was characterized by an unusually high number of infant and child graves.

Worthy Park, Kingsworthy, Hampshire was also unable to be fully excavated; 105 individuals from 94 inhumation graves were found, plus 46 cremation urns (Hawkes and Grainger 2003). The excavators estimate that about half of the cemetery, dating from approximately the middle of the fifth century to the middle of the seventh, was unable to be recovered due to a driveway, beehives and clumps of large trees (Hawkes and Grainger 2003: ix, 7).

Each of the three cemeteries under consideration are somewhat contemporaneous, with a substantive overlap during the 6th century AD. As expected, regional differences are displayed, although each conforms to the normative Anglo-Saxon cemetery pattern of some men being buried with weapons, women with brooches and beads, with knives and containers being commonly interred with both sexes. Great Chesterford is somewhat unusual in as much as a significant number of children were recovered (see Cave and Oxenham 2017a). Notwithstanding these differences, these cemeteries represent people living in late 5th through to early 7th

century AD small rural communities, probably farmsteads, and represent the funerary treatment of ordinary Anglo-Saxon individuals for the most part, rather than high status elites.

Because the original published ages from these three cemeteries aggregated all individuals over 40 to 50 years, there was a need to identify the elderly (ostensibly those 65 years and older). The re-ageing of individuals into extended age categories was done using the method of Cave and Oxenham (2016). This method uses dental wear, and relies on the contention that ancient societies, like those today, would have had a predictable age structure, and would have included individuals at least up to the age of about 80 years (Chamberlain 1997: 249). As noted in Cave and Oxenham (2016), dental wear is not used as an ageing method, per se, but as a means of seriating the population from least worn to most worn; although toothwear may have some limitations as a means of ageing (e.g. differential toothwear by status, gender; use of teeth as tools; antemortem tooth loss), in a stable, relatively non-hierarchical population with no evidence for gendered dietary patterns, the method is confirmed as suitable if the re-aging produces the same or similar ages to those of known age (i.e. those less than 45 years).

Each cemetery was individually examined, with all adults seriated and re-modelled on a suitable population of known age at death; both Great Chesterford and Worthy Park, adults were defined as those over 18 years; the Mill Hill cemetery had an unusually high number of individuals between 18 and 25 years, thus only those 25 years or over were seriated. The oldest age category used is 75+ years, but low sample sizes made statistical comparisons problematic. Consequently, these cases were added to the 65+ years category, encompassing all individuals 65-74 years plus those 75+ years (older adults). The other age categories analysed were middle-aged adults (45-64 years), young adults (18-44 years) and subadults (0-17 years) (see Table 5.1).

This analysis also includes individuals who had lost all their molars ante- or postmortem, as well as those unavailable for examination; for the most part, they

were placed into their original ageing categories. Individuals who were given open-ended age categories were conservatively placed in the category immediately above the specified age. Although someone originally aged, say, 45+ years, could be any age above that, we placed them in 45-54 age category, as it was the one closest to the original ageing. Those individuals who appeared to have lost at least half their teeth before they died were treated as if they were at least 50-60 years old (as suggested by Mays (1998: 62). Any individual who could not be aged by either method was not included in the analysis. Original ages plus the re-aging data can be seen in Appendix 4.

Qualitative and quantitative analysis related to various aspects of the burial rite, including grave goods, grave depth, placement of the individual in the grave, and whether the burial was normal or non-normative (see complete list of grave goods and treatments assessed in Table 5.3, Results). Where appropriate, items were also looked at in combination with others, as well as the average number per individual, or average size of item (e.g. spear length).

Grave depth included the categories: shallowest, shallow, normal, deep and deepest (Table 5.2). The shallowest were more than two standard deviations (SD) below the average for that particular cemetery; shallow graves more than one SD below average; normal were within one SD of the average. Deep graves were more than one but less than two SDs above average. Deepest graves were two or more SDs greater than the average. The depths recorded at Worthy Park and Mill Hill are the depths into the hard chalk matrix, rather than depth from the grave cut or beneath the surface. Great Chesterford graves had an average depth of 0.97m, while Mill Hill (0.53m) and Worthy Park (0.29m) were much shallower.

Non-normative burial is defined as burial which differs greatly from normal practice (although not necessarily in a negative sense), including a reverse or unusual orientation, prone, the placement of rubble in the grave, or other forms of departure from standard practice seen in any given cemetery context. Standard burial practice is not always strictly defined and limited; for example, supine burial is most common

in Early Anglo-Saxon cemeteries, but a substantial percentage of individuals are buried on their side, which is also normative burial practice. While the identification of non-normative burial treatment may appear to be straightforward, the interpretation of such burials is less so and can range from exceptional high status at one end of the spectrum through to deviancy (social outcasts or of danger to the living) at the other end, and all manner of interpretations in between (see Reynolds 2009 for a discussion of Anglo-Saxon deviant burial practices).

Table 5-1 Age distribution of each sample after re-ageing

Age (years)->	0-2	3-17	18-29	30-44	45-54	55-64	65-74	75+	Total
Great Chesterford	63	19	19	27	16	11	7	1	163
Mill Hill	1	23	13	14	10	6	3	1	71
Worthy Park	7	20	14	15	11	10	8	7	92
Total	71	62	46	56	37	27	18	9	326

Table 5-2 Grave depths

	Great Chesterford	Mill Hill	Worthy Park
Shallowest grave*	0.10	0.06	0.00
Deepest grave	1.75	0.96	0.61
Average depth	0.97	0.53	0.29
Standard Deviation	0.29	0.19	0.13

*All measurement in metres

Finally, statistical analyses included assessing (1) the four individual age categories (older adults, middle-aged adults, younger adults) and (2) subadults compared to adults (collectively) against grave features or goods on a presence/absence basis (χ^2 with Yate's corrections and Bonferroni post hoc testing if required).

Results

Multi-variable Comparisons

With some exceptions, statistically significantly more adults (collectively or by adult age class) than subadults had grave goods or particular burial treatments (Table 5.3). By individual age classes, fewer young adults were buried in shallow graves relative to other adults and subadults, and a greater proportion of young and middle-aged adults have spears and shields relative to subadults and old adults. Considering adults alone, few differences are seen, although there is a slightly lower frequency of grave goods (in general) among middle-aged adults and a significantly greater frequency of grooming items among older adults. Indeed, older adults, were almost three and four times as likely (37.0 per cent of those over 65 years) to be buried with grooming items as middle-aged (12.5 per cent of 45-64 year olds) and young adults (8.8 per cent of those 18-44 years) respectively, and those over 45 years received 12/14 tweezer sets deposited in these cemeteries (Table 5.4).

Individual Variable Outcomes

Graves: A greater proportion of older adults have shallow graves than other adults (Table 5.3). While normative burial positions include both supine and side burial, children and the elderly are most likely to be buried on their sides. There appears to be an association between side burial and age, including presence of osteoarthritis (Figure 5.1). Older adults were least likely to receive a non-normative burial.

Table 5-3 Mortuary treatment (combined cemeteries) comparisons by age class

Variables	*Age category (years)*				*χ2 results†*		
	0-17 S n(%)*	*18-44 Y n(%)*	*45-64 M n(%)*	*65+ O n(%)*	*Adults v Subadults*	*All categories (Bonferroni)*	*Adults only (Bonferroni)*
Sample size	133	102	64	27			
Deep graves	13 (9.8)	13 (12.8)	11 (17.2)	4 (14.8)	A>S		
Shallow graves	30 (22.6)	7 (6.9)	6 (9.2)	3 (11.1)	A>S	Y<S=M=O	
Buried on side	24 (18.1)	9 (8.9)	6 (9.4)	3 (11.1)	A>S		
Non-normative burial	13 (9.8)	7 (6.9)	7 (10.9)	1 (3.7)			
With grave goods	65 (48.9)	94 (92.2)	52 (80.0)	24 (92.3)	A>S	Y=M=O>S	Y=M=O**
Grooming items	1 (0.8)	9 (8.8)	8 (12.5)	10 (37.0)	A>S	O>Y=M>S	O>M=Y
Girdle items	6 (4.5)	16 (15.7)	9 (14.1)	5 (18.5)	A>S	Y=M=O>S	
Brooches	7 (5.3)	28 (27.5)	18 (28.1)	6 (22.2)	A>S	Y=M=O>S	
Brooch and necklace	6 (4.5)	23 (22.6)	12 (18.8)	5 (18.5)	A>S	Y=M=O>S	
3+ dress items	5 (3.8)	12 (11.8)	7 (10.9)	3 (11.1)	A>S		
Necklaces	21 (15.8)	27 (26.5)	14 (21.9)	6 (22.2)			
Amber beads	12 (9.0)	23 (22.6)	10 (15.6)	5 (18.5)	A>S	Y=M=O>S	
Monochrome beads	18 (13.5)	21 (20.6)	11 (17.2)	6 (22.2)			
Polychrome beads	8 (6.0)	17 (16.7)	10 (15.6)	4 (14.8)	A>S	Y=M=O>S	
'Other' beads	5 (3.76)	13 (12.8)	2 (3.1)	1 (3.7)		Y=M=O>S	
Buckles	7 (5.3)	37 (36.3)	21 (32.8)	12 (44.4)	A>S	Y=M=O>S	
Knives	24 (18.1)	59 (57.8)	37 (57.8)	16 (59.3)	A>S	Y=M=O>S	
Pots	12 (9.0)	18 (17.7)	7 (10.9)	6 (22.2)			
Keepsakes	9 (6.8)	8 (7.8)	6 (9.4)	3 (11.1)			
Any weapon	3 (2.3)	28 (27.5)	16 (25.0)	5 (18.5)	A>S	Y=M=O>S	
Shields	2 (1.5)	12 (11.8)	8 (12.5)	2 (7.4))	A>S	Y=M>O=S	
Spears	3 (2.3)	28 (27.5)	16 (25.0)	4 (14.8)	A>S	Y=M>S=O	

† Results of $\chi 2$ If $p < 0.05$

* S=subadults

Y=young adults (18-44 years)

M=middle-aged adults (45-64 years)

O=older adults (65+ years)

**p=0.0473 but no individual $\chi 2$ was significant at the Bonferroni test

Table 5-4 Grooming items by type and age

Age category (years)	3-17	18-29	30-44	45-54	55-64	65-74	75+	Total
Brush tube		2	2		1			5
Comb			1	1		1		3
Razor						1		1
Shoe-lace tag		1						1
Toilet Implement/s		1	1	1			1	3
Tweezers	1	1		2	3	3	4	14
Total	1	5	4	4	4	5	5	28

Grave goods: The mean number of surviving grave goods per individual increased with age: older adults received 6.2 goods each, in comparison to 5.6 (middle-aged), 5.0 (young adult) and 2.9 (subadult). Regarding brooches, the number per individual declines with adult age: 3.6 brooches each (young adults); 2.4 (middle-aged); and 1.5 (elderly). The middle-aged and older adults were also less likely to receive both a brooch and a necklace. Both older categories were buried with half their brooches worn or repaired whereas 28 per cent of young adults with brooches had at least one worn or repaired brooch.

Young adults, most likely to be buried with a necklace, had an average of 69.9 necklace beads, nearly twice as many as older adults (38.5 beads). Average knife length increases with age, with subadult knives averaging 109mm and elderly knives 135mm. Keepsakes (items ostensibly kept/passed down through the generations) include Roman objects, especially coins, fragments of spoons or vessels as well as pieces of broken glass, fossils, animal parts (teeth or tusks) and pieces of metal. Deposition with keepsakes, which increases with the age of the deceased, appear to

have no practical purpose, and may have been kept because of perceived rarity, for amuletic properties, or for reasons of personal meaning (Meaney 1981).

The presence of weapons declines with increasing age, but average spear length increases with age, from 183mm (subadults) to 380mm (elderly). The rarest weapons are swords and seaxes, with only eight found in these three cemeteries. One 65+ individual was buried with a seax, four middle-aged and one young adult had swords, and two swords were buried with unaged individuals. Only one older individual (11 per cent) was buried with two or more weapons, compared to 13 (12.7 per cent) younger adults and 10 (15.6 per cent) the middle-aged.

Discussion

Although there are many differences between adult age categories and those of subadults, there are few clear differences between the adult age categories. Nonetheless, there were significant differences among the adult age classes with respect to grooming items and unusual beads.

Deep and shallow graves

This is a difficult mortuary variable to explore as a fundamental assumption is that actual burial depth was correctly identified and measured by the excavators. In the absence of any evidence suggesting otherwise, this assumption is tentatively accepted for the purposes of this discussion. Relatively more middle-aged adults received deep burials than any other age cohort, followed by older adults. However, the deepest graves were reserved for a child (Mill Hill, 7-9 years, no goods), a young adult (Great Chesterford, 35-45 years, pair of gilt brooches), and two unsexed adults (Worthy Park, coffined, knife, Great Chesterford, probably a spear) In terms of the social meaning of grave depth, the assumption is that deeper graves required greater energy expenditure, often seen as a status indicator (e.g. see Hohmann 2004). A deep grave can also be an attempt to prevent a feared person becoming revenant, thus not necessarily indicative of high status (Tsaliki 2008). All that we can say for these cemeteries is that older adults were not singled out for any additional energy expenditure associated with the construction of deep graves.

It should be noted that at both Mill Hill and Worthy Park, grave depths recorded are those dug into the hard chalk matrix, while a mixture of sand and gravel lay below the Great Chesterford topsoil, meaning that these graves were much easier to dig (Evison 1994; Hawkes and Grainger 2003; Parfitt and Brugmann 1997). This is reflected in the average depths for each cemetery, although more effort was expended at Mill Hill than Worthy Park. Willingness to dig deep into the chalk or gravel seems to suggest that the individual being buried was worth more effort, whether out of respect or fear. However, the deep Mill Hill grave of a child was dug into the ring ditch; it may be that in this case the chalk matrix had already been dug. The next deepest grave was Burial 93, male 55-64 years buried with the full weapon set of sword, shield and spear as well as a glass bell beaker.

Approaching the issue from the perspective of shallow graves, the likelihood of adults being buried in a shallow grave increases with age – 6.9 per cent for young adults, compared to 11.1 per cent of older adults. The difficulty of digging a deep small grave may explain a preference for shallow infant graves, but not shallow graves for older adults. Of the eight graves classified as 'very shallow' one was for a 75+ woman, two were aged 45-54, four held subadults; one held an unaged individual. No young or middle-aged adults received very shallow burials. Nonetheless, 6/9 75+ individuals were buried within one standard deviation of the average depth, with four of those at average depth. So, although some older adults were given exceptional treatment, deep or shallow, largely they were treated like everyone else.

Side burial

As noted earlier, side burial is not considered non-normative. Infants and the elderly are the groups most likely to be buried lying on their side. This may be because it is a pose that imitates sleeping rather than display, a pose understandable for infants who sleep more than adults do, and suggestive of a funeral conducted for personal memory and grief rather than 'an active strategy to maintain and enhance standing within the community' (Halsall 1996: 13) with an impressive display (Williams 2007a). Does this suggest that older individuals of the past, like today, were retired from the

wider society, confined to the domestic sphere, or even infantilized (Gowland 2002: 23)?

It could be that older individuals are buried this way because, like infants, their mobility was reduced and their ability to partake in the fuller society limited by age-related constraints. They may have suffered from diseases of the elderly, like arthritis, making movement more difficult, or dementia, making social interactions appropriate to their position in society more challenging. Dementia is not visible on osteological material, but arthritis is. Notwithstanding low numbers, Figure 5.1 demonstrates that all individuals buried on their side in the oldest age category also suffered some form of arthritis. As this study relies on published reports, we are unable to delve any deeper into these conditions – the reports involved note only presence or absence of a pathology, often in tabular form, with perhaps general discussion on the condition. It is not possible to determine individual immobility, atrophy or particular symptoms. As degenerative bone disease is an age related condition this result is not surprising, but it does not preclude arthritis being a possible reason for side burial; one third of older adults showed no arthritic changes — none were buried on their side.

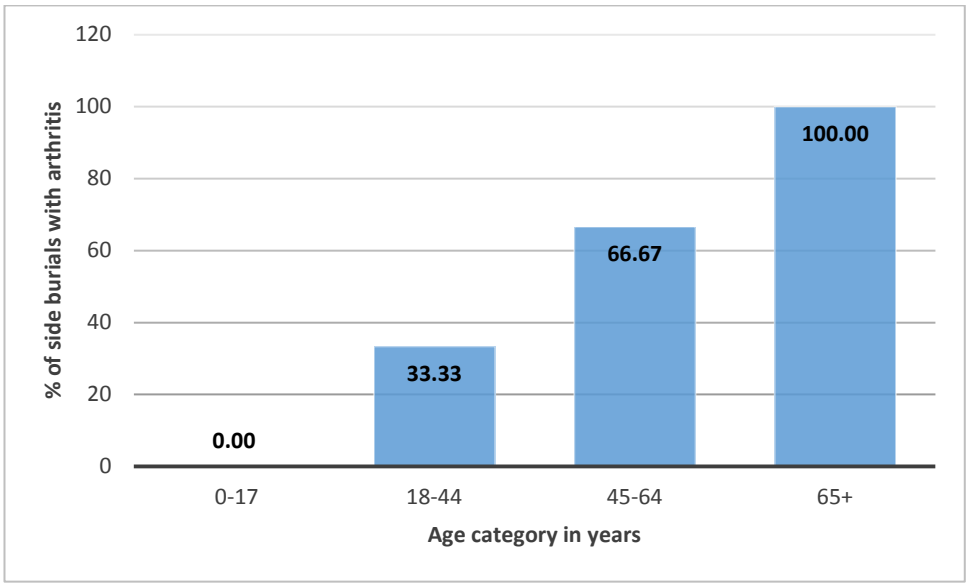

Figure 5-1 Association of side burial and bony arthritic changes

Non-normative burial

Non-normative burials are relatively evenly distributed by age cohort with the exception of older adults, where only one individual received such burial treatment. This may indicate that those having reached old age were less likely to expose themselves (or be exposed) to behaviours incurring social sanctions, thus attracting non-normative burial. Conversely, assuming non-normative burial denotes elite status, high status elderly individuals are rarely observed in these cemeteries. The single older adult in this case was completely excavated and scattered throughout the fill of another grave, suggesting a negative non-normative burial motivation. The middle-aged individuals were placed in unusual orientations (4), had graves that were too small (e.g. shorter than the individual was tall) (2) plus one prone burial. Most of the subadults in this category (10/13) were buried in an unusual orientation, so perhaps we could interpret this as a particular treatment suitable for children.

The oldest non-normative burial, Great Chesterford's grave 114, 75+ years, was a woman whose remains were scattered throughout the fill of a young arguably wealthy man. It may be argued that this is an example of post-depositionional activity, but there are circumstances that suggest that this may be a deliberate act. The few intercutting graves at Great Chesterford caused little damage, with almost all of the skeletal elements remaining in positon; this suggests that locations of graves were marked in some way. However, Grave 114, although presumably initially buried normatively, was apparently completely excavated for the burial of the young weaponed man. The skeleton was substantially complete, except for right radius, both hands, feet and fibulae (Waldron 1994b: 62). It would have been valuable to have a field anthropology analysis of this grave to determine the state of decomposition and thus a possible time since burial. It does seem, however, that the grave was opened after substantial decomposition had occurred as the bones were highly disturbed and small labile joints lost, but the grave was dated to the same phase of the cemetery as the later grave; this, as well as the lack of substantial damage to other graves in the cemetery through intercutting, and the fact that the later grave completely obliterated the earlier one, suggest that the grave was known

and the desecration deliberate. The presence of two brooches also indicates that robbery, a common cause of grave opening, was not the motive (Aspöck 2011).

Whether this was a deliberate act against this elderly woman or mere accident a point that may be argued. The two graves both come from the same chronological phase, AD 450-500, the earliest phase in the cemetery (Evison 1994), so it is likely that the grave, if not the woman, was known to the grave diggers. If a mistake was made the remains could have been replaced or reburied; instead they appear to have been thrown carelessly into the fill. This is suggestive of, at least, ignorance — of her life and her great age — or at worst, a deliberate act demonstrating lack of respect for this elderly woman.

Grave goods

Adults received grave goods at rates ranging from 81.3 per cent (middle-aged) to 92.2 per cent (young adults) and 88.9 per cent (older adults). For those receiving goods, the number of goods increases with increasing age. Anglo-Saxon grave goods are usually dress accessories, weapons, or personal items like knives, tools or tweezers. The nature of these goods as personal possessions means that it is unsurprising that the number of goods increases with age. As an individual grows older they are more likely to acquire items, and ultimately to be buried with them.

An adult buried without goods may indicate poverty, in that they did not own an item suitable for the grave, or that items were unable to be spared. It may also mean that they came from a culture different to the majority of the community – perhaps travelling merchants, traders, servants or slaves (Evison 1994: 49-50; Stoodley 1999: 91). Although burial practices did eventually change under Christianity, furnished burial remained common and permissible in Christian communities up until *c.* the early eighth century AD, so Christianity itself is an unlikely cause of unfurnished burial (Lucy et al. 2009: 420; Welch 2011). It is also possible that apparently unfurnished burials contained non-surviving organic items; yet, they still differ from the majority. As adults receive grave goods at similar rates, it is necessary to examine the goods separately to determine if there are any associations between goods and age.

Grooming items

Older adults were much more likely to be buried with grooming items (especially tweezer sets). Age advertises its presence on the body in ways that are immediately visible, whatever the cultural significance of old age; skin wrinkles, hair greys and thins, and movement becomes visibly difficult (Gowland 2007a: 154). Different cultures may have differing perceptions of beauty, but the increased presence of grooming items among the elderly suggests that the ageing Anglo-Saxon body needed assistance to make it presentable. These personal items then 'die' with their owner, perhaps symbolising the care needed for the deceased in order to transition successfully to the afterworld (Williams 2007a). The self-evident use of tweezers is their employment in the elimination of unwanted hair, but they can also be used for the removal of splinters or for craft activities like sewing leather or textiles (Williams 2007b: 69). The craft uses should not be ignored: while Anglo-Saxon women had responsibility for cloth and clothing manufacture throughout their lives, it may be that older men made leather items when they were no longer able to till the fields or march into battle.

Girdle items

The category of girdle items includes chatelaines, girdle-hangers and keys. Chatelaines here are defined as chain-like objects, used for hanging items from the waist. Girdle-hangers also hang from the waist, usually occur in pairs and have T- or W- shaped terminals; they appear to be derived from keys but neither exhibit wear patterns that would suggest that they were used for suspension nor the strength to be used as keys (Felder 2015: 3). They are decorative, but may also have symbolic meaning (Felder 2015: 2-3). Keys, sometimes called latch-lifters, are metal items presumably for opening simple locks.

There were only four girdle-hangers in this dataset, none buried with older individuals: the oldest, 20-25 years, had two girdle-hangers, while the others were aged 17-19 years and 6-8 years. Felder (2015: 14) suggests that these items may be symbolic of women with medical knowledge, spiritual authority and or those who

dealt with birth and death, roles which suggests experienced rather than younger women. Stoodley's (2000: 466) finding that women buried with girdle items died at a younger age on average than those buried with dress accessories would seem to suggest that they are rarely found with older individuals; however, in this study the average adult age at death of those buried with these items, 43.6 years, is only slightly less than those buried without them, 44.1 years, and those buried with dress fasteners and jewellery, 44.2 years. Stoodley's somewhat different findings probably relate to the invisibility of older individuals in the samples he analysed.

All those 45+ years buried with girdle items carried keys, from a single key up to four, and one also had a chatelaine in her grave. Thus, the average age at death of those with either a chatelaine or a girdle-hanger (n=10), 25.6 years, or if the children were excluded, 30.6 years, echoes Stoodley's (2000: 466) finding. However, Stoodley (2000: 463) specifically includes keys along with chatelaines and girdle-hangers in this category. It does suggest, however, that if keys are omitted, older women no longer have the role suggested by chatelaines and girdle-hangers.

Brooches

The three adult age categories are buried with brooches at similar rates – 27.5 per cent younger adults, 28.1 per cent middle-aged and 22.2 per cent older individuals. Though, considering that seventeen of those assigned to the two older categories are female and only eight are males, this result exaggerates the proportion with brooches, as brooches are nearly always found with females. On average, young adults are buried with 2.6 brooches each, the middle-aged 2.4 and the oldest, 1.5. The obvious conclusion here is that women discard or give away their brooches as they age; however, the situation is a little more complex than it first appears.

Mill Hill differs from the other two cemeteries as individuals here were buried with up to six brooches each, as opposed to a maximum of three at Great Chesterford and two at Worthy Park (Parfitt and Brugmann 1997; Evison 1994; Hawkes and Grainger 2003). Nonetheless, towards the end of Mill Hill's use, fashions changed and individuals began to be buried with a single brooch; the two older individuals from

Mill Hill come from the latest phase of the cemetery and both are buried with only one brooch (Parfitt and Brugmann 1997).

Martin (2012) concludes that brooches were inalienable possessions to be repaired but not discarded or given away. Anglo-Saxon women travel through life with their diverse and individual brooches; as the wearers age, their brooches accumulate meaning and memories, both to the wearer and those who see them; ultimately they are retained for the funeral tableau and the grave, thus providing a visible link between the still living and the no-longer living (Martin 2012: 53). Despite this accumulated meaning, and despite the habit of older individuals to cling to fashions and practices long after they have gone out of date, our analysis suggests that brooches they probably wore when younger were discarded. Were the two old people from Mill Hill unusually fashionable for elderly individuals, or were they prepared for their burials by younger family members, who wanted them to appear more up-to-date?

Many brooches show signs of wear or repair, including those of the oldest individuals (e.g., woman in grave 95, Mill Hill, 75+ years, had a brooch too damaged to wear), and those younger (grave 20, Great Chesterford, 15-25 years, with a bronze cruciform brooch, broken and mended in antiquity (Evison 1994; Parfitt and Brugmann 1997)). It may be the case that these brooches were inalienable *family* items rather than inalienable *personal* items. If a young woman with three or more brooches grows into an elderly woman with only one in her grave, then those excess brooches must have gone somewhere. As worn or repaired brooches are found in the graves of the young as well as the old, it may be that brooches remain in the family until they go to the grave; we cannot tell if all an individual's brooches went to the grave with them, or whether there was a pre-funeral distribution. Without doubt, some valuable brooches have given their lives to remain with their wearers, as have some old and worn ones.

Necklaces

Young adults (26.5 per cent) are buried with necklaces more often than middle-aged or older adults (both 22 per cent); they also have more beads in their necklaces. Moreover, they were more likely to wear beads of polychrome glass or amber than their older associates, although older individuals were the group most likely to be buried with monochrome glass beads. This suggests that not only did some individuals lose their necklaces altogether as they aged, others saw them shrink, whether through loss or donation we cannot say. It may be that, as in similar cemeteries on the continent, the lavishness of a burial and the burial display relates to the stress caused by the death of that individual; the potential damage to the basic fabric of society necessitates regeneration of social relations through the burial tableau (Halsall 1996: 13). This notion is supported by the low numbers of goods deposited with infants and children who have had neither time nor opportunity to become embedded in society's social tapestry (Halsall 1996: 13); it also suggests that the death of older adults should cause less disruption to the fabric of the community than those of the young, as their deaths should be considered to be expected and natural. This is not to say that older individuals were not missed or mourned, but that their deaths are recognized as part of the normal pattern of life and death.

Miscellaneous goods: Keepsakes, Pots and Containers

Keepsakes in burials increase with increasing age. All keepsakes buried with older adults have a Roman origin: a spoon bowl, the foot of a Roman vessel, and a fragment of Roman glass. Whether this is a random outcome or due to a need to associate older individuals with a bygone culture is impossible to say, but it may also indicate status: the reuse of old objects as scraps and cheap substitutes for more fashionable, contemporary items suggests an 'aspirational' rather than high status. It can be claimed that Roman goods in Anglo-Saxon graves may have a practical function– personal adornments, vessels, coins, household furnishings like keys (White 1991) – but items in our category 'keepsake' do not have an obvious practical use. Meaney (1981) suggests these objects had magical properties and were used for amuletic purposes, while Eckardt and Williams (2003) focus on the construction of social memories and forging tangible links between the past and the present. Perhaps older

individuals, with longer memories, are able to associate these items with pasts they want to remember.

Regarding containers made of pottery, metal or wood, simple pots are the most frequent grave good among infants, but it is older adults who are most likely to be buried with a container. Such vessels may be associated with ritual feasting, victuals for the afterlife (see discussion in Lee 2007: 72-86) or have connotations regarding their preferential association with the very young and very old; perhaps indicating some form of social or symbolic link or commonality between these cohorts. Some containers, especially those associated with infants, are simple pots, while others, often associated with weaponed males are more complex items like metal-bound buckets; this association, alongside their relative rarity, suggest higher status.

Weaponry

Once adulthood is reached, weaponed burial declines with increasing age; 27.5 per cent of young adults were buried with at least one weapon, and 18.5 per cent of older adults. Deposition of spears, the most common weapon within graves, thus reflects that of any weapon, but shield deposition declines more sharply with age, with only two older individuals buried with one. Graves containing swords and seaxes are considered to be of the highest status (e.g. Stoodley 1999: 102), and only eight of these items were found in these three cemeteries, making statistical analyses problematic. However, 6.3 per cent of middle-aged adults and 3.7 per cent of older adults were buried with a sword or a seax, compared to 2 per cent of young adults. Burial with more than one weapon peaks in middle-age, as does burial with 3 weapons; 4/6 aged individuals with three weapons were middle-aged and one, older.

Sex biases in the older dataset may also have minimized these differences. Weapons are a masculine item, and although there are cases of Anglo-Saxon females being buried with weapons, there are none here; all weapons are found with males or unsexed individuals (Lucy 2011; Stoodley 1999). The oldest age category contains only 8/27 males; 12.5 per cent of sexed males in the older adult age category was buried with three weapons, including swords or seaxes. The average length of spears

increases with increasing age. Do individuals trade up to a longer spearhead as they age? Perhaps they hand their shorter ones to their sons or apprentices? Is this related to the symbolic role of the spear in burials (Härke 1990)? (Although not as marked, the average knife length also increases with age, with those over 75 years having knives 14mm longer than other age groups.) Although younger individuals are most likely to be buried with a weapon, higher warrior status appears to be reached in middle age and maintained through to old age.

Conclusions

This paper aimed to explore as aspects of the identity and treatment of the elderly in pagan Anglo-Saxon England through funerary practices. Using data from three cemeteries, we first identified the elderly, then examined mortuary treatment of these older adults with respect to subadults, young and middle-aged adults. The only clear difference between older individuals and others was in the deposition of grooming items, which potentially speaks to the visible bodily effects of ageing. However, it was also found that the elderly were generally buried with more grave goods than other age cohorts; the length of both spears and knives tended to increase with age; and older individuals were most likely to be buried with keepsakes (especially Roman ones), monochrome glass beads, containers, knives, girdle items and buckles. Finally, older individuals were least likely to be given a non-normative burial.

Although older adults are buried by those younger, possibly their children or grandchildren, and a grave is created by the burial party, it is the individual who is being buried who has created the social and cultural links which are exemplified in the burial ritual. Older adults then, as they are today, are not a homogenous group, and it is their agency and actions during life which ultimately create the funeral ritual and subsequent grave. Thus while the burying party appears to choose the mode of burial, this choice is affected by the deceased's actions year by year.

These findings suggest that in general, surviving into old age did not have a detrimental effect on a person's standing in the community, with burial manner and

the nature and number of grave goods suggesting quite the opposite. Intriguingly, the popularity of grooming items in the graves of the elderly may reflect attempts to ameliorate some of the negative physical effects of ageing, and even perhaps help in the transition to the next phase – the afterlife. Such items may also be providing us with a rare glimpse into the very personal perception of self by the deceased. While it is possible that the analyses of gendered goods, like weapons and brooches, may have been affected by sex imbalances in the older age category, overall, we suggest that older adults in Early Anglo-Saxon England earned themselves a status that saw them well treated and perhaps even revered.

ACKNOWLEDGEMENTS

Thank you to the University of Southampton, the Duckworth Laboratory, Cambridge, and the Dover Museum for access to skeletal material; also to Geoff Halliwell and the Dover Archaeological Group for laboratory assistance. This research is supported by an Australian Government Research Training Program (RTP) Scholarship

Chapter 6 Chapter Six: sex and the elderly

Thenadier had just passed his fiftieth year; Madame Thenadier had reached her fortieth, which is the fiftieth for a woman; so that there was an equilibrium of age between the husband and wife

(VICTOR HUGO 1862, LES MISERABLES)

Chapter Five provided the first analysis of the graves of the elderly, those over 65 years, comparing them with those younger. This analysis concluded that the elderly are not a homogenous group, and survival into old age did not necessarily have a detrimental effect on an old individual's standing in the community. However, some elderly were treated exceptionally like burial 49, the oldest individual from Worthy Park who was buried with a seax, spear, shield and a gunmetal-bound wooden bucket among other items, while others were considered worthy of little effort in the burial ritual. These include all those buried with no goods, like burial 90 from Great Chesterford, whose legs had to be bent so that he would fit into his too-small grave. Surprisingly, toilet implements were found to most likely be buried with elderly individuals.

This analysis, however, was somewhat constrained by the unbalanced sex ratios in the oldest age categories. As a consequence, Chapter Six is devoted to determining whether sex had any influence on both the likelihood of growing old and the burial treatment given to old individuals.

Publication Information

Sex and the elderly: Attitudes to long-lived women and men in early Anglo-Saxon England. *Journal of Anthropological Archaeology,* 48: 207-216.
doi: 10.1016/j.jaa.2017.08.003

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Current Status:

Published September 2017

Declaration of authorship:

Formulation of arguments in manuscript; composed overall question, background research, statistical analysis, discussion and conclusion.

Signed

Christine Cave

Refinement of arguments, contributed to overall question and methodology, argument formulation and editorial supervision of paper, rewrote sections of manuscript

Signed

Professor Marc Oxenham

NOTE ON PUBLISHED PAPERS

The text, tables and figures of the published paper comprise the rest of the chapter. The references will be found, with all other references, at the end of this thesis.

A PDF copy of the paper as published can be found in Appendix 3

SEX AND THE ELDERLY: ATTITUDES TO LONG-LIVED WOMEN AND MEN IN EARLY ANGLO-SAXON ENGLAND

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Abstract

Currently, in the industrialised world, women have a higher life expectancy than men, a pattern often seen in the past as well. However, in Britain, from the Neolithic to medieval period, it has been suggested that men outlived women. One issue with such statistics is that age estimation techniques are often biased, underestimating the age of older individuals, while the oldest individuals in a sample often disappear into catch-all categories such as 50+ years. Here we employ an approach that renders visible the older individuals in three archaeological cemeteries (Great Chesterford; Mill Hill; Worthy Park) to assess gendered longevity and differential mortuary treatment of the elderly in Anglo-Saxon England. We find that women tended to outlive men and while some elderly females were respected in death, others were more likely to receive a non-normative burial than males. Old males tended to receive 'elaborate' burial, and were less likely to receive a deviant burial. It appears that ageing in Anglo-Saxon England was a gendered process, with some older women respected like their male counterparts, while others were possibly perceived less auspiciously.

Key Words

Age at death;
life expectancy;
gender;
cemeteries;
ageing;
mortuary analysis

Highlights

- Today, women tend to live longer lives than men
- They also tend to endure higher morbidity
- In early Anglo-Saxon England, women survived longer than men
- The oldest males tend to be well treated in death
- Although some are treated exceptionally, the oldest females fare less well

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

1. Introduction

People wear out: with increasing age, physiological function decreases while probability of death increases; these senescent changes eventually cause systemic collapse and a life ends (Ricklefs 2008). Although current day life expectancy at birth varies from 46 years in Sierra Leone to 84 years in Japan (World Health Organisation 2015) the human species has an evolved characteristic life span of about seven decades (Gurven and Kaplan 2007). Actual differential life expectancies at birth are more likely to reflect extrinsic than intrinsic mortality factors; although there are differences in mortality rates between populations and over time, differences in age of senescence have been found to be small (Gurven and Kaplan 2007).

Nonetheless, life expectancy for males and females tends to differ. In the modern Industrialised world, women have a higher average age at death than men. For example, in Australia 2010-12, men had a life expectancy at birth of 79.9 years (up from 47.2 in 1881-90) while women could expect to live 84.3 years after birth (up from 50.9 years in 1881-90) (Australian Bureau of Statistics 2014). This trend continues in countries with very low overall life expectancies; for instance, in Sierra Leone women have a greater life expectancy at birth of 46.2 years to men's 45.8 years (World Health Organisation 2015). This is not only a modern phenomenon: in Sweden 1751, males had a life expectancy at birth of 36.8 years, against 39.9 years for females (Sundbärg 1906). In addition, the gap between male and female life expectancy has widened as general life expectancy has increased (Colchero et al. 2016).

There appear to be exceptions, at least to some extent. For instance, in rural India 1957-8, men had a life expectancy at birth of 26.9 years while their female counterparts could expect only 26.6 years (Kumar De and Kumar Som 1964). Nonetheless, although the gap between male and female life expectancy widens to peak at 2.8 years at age ten, after that point it declines; at age 50 rural Indian women have a greater life expectancy than men, an advantage which they maintain for the rest of their lives(Kumar De and Kumar Som 1964). This pattern possibly reflects not

only the dangers of pregnancy and childbirth but also a culture preferencing male children; when those hazards are survived, women begin to live longer than men.

This pattern may also suggest that higher age at death for women is part of the human condition. This is supported by studies in the biological sciences, where it is noted that in primates in general, female survival advantage is ubiquitous and persistent throughout life, especially in humans; this is despite females suffering greater morbidity and physical limitations than males, particularly late in life (Austad and Fischer 2016; Colchero et al. 2016).

In contrast, in the distant past expectations are often otherwise. In his report on the human remains at the Anglo-Saxon cemetery of Great Chesterford, Waldron (1994b: 52-53) states:

> The cumulative percentage distribution for males and females of known sex shows that the men in the population tended to outlive the women, for whereas only 14.3% of the women survived beyond the age of 45, 26.7% of the men did so. The tendency for males to outlive females in the past has been noted by other authors (see Brothwell (1972), for example), and it is only comparatively recently that the converse has been the case, almost certainly as a result of improved obstetric care.

One of the major problems in these types of analyses is the low, catch-all highest age at death category. An age category of 45+ years encompasses all individuals ranging from fit and energetic athletic types who have just passed middle age, up to the physically and presumably psychologically frail. Such highest age categories also mask the transition from the period where a woman is at risk from the negative effects of pregnancy to the relative safety of menopause. Although categories like 45+ years do not deny the existence of the very old, they render them invisible (see Cave and Oxenham 2016). Other factors also conspire to disguise the elderly in archaeological samples: taphonomic processes, which are further considered below, methodological practices, inappropriate reference populations or poor correlation of certain traits with age at death (Boddington 1987; Cave and Oxenham 2016; Gowland

2007a). In addition, known biases affect the age at death estimations of the elderly, tending to underage them (e.g.Molleson et al. 1993: 167).

Taphonomic processes have long been considered to affect, and thus bias, preservation of archaeological skeletal remains in several ways. Weiss (1972) notes that skeletal collections are usually found to contain more males than females. While noting that differential burial practices, unrepresentative cemeteries, or poor preservation of more gracile female skeletons could be responsible, he suggests biases in sexing methods are most likely to blame. While sexing methods have improved since the early seventies, Walker and colleagues (1988: 186-187) find males still overrepresented in archaeological sites, and also suggest that the comparatively rapid breakdown of more gracile female skeletons, especially those of postmenopausal females, may be the cause. To test this hypothesis, they examined age and sex biases in the preservation of human remains by comparing skeletal remains with burial records from two Californian sites from differing time periods; they found that age, rather than sex, was the major cause of this bias (Walker et al. 1988: 184-186). This potentially means that the remains of both infants and the elderly are most likely to be poorly represented in demographic profiles (Walker et al. 1988: 187). With regards to sex, they found sex ratios between burial records and the skeletal data were comparable, and sex differences in fragmentation were not demonstrated, despite low numbers of surviving bones; they concluded that sex biases were not likely to be a significant cause of missing females (Walker et al. 1988: 188).

Walker (1995: 35) further addressed this issue using skeletal material from St Bride's Church in London; this time finding that preservation differences, while small, can be large enough to affect mortality profiles. The pubic bone is one of the most reliable for the interpretation of both age and sex, but its preservation is problematic; without this element many skeletons are categorised as being of undetermined sex (Walker 1995: 35). Walker found that for individuals with a documented age over 44 years, poorly preserved pubic bones in females significantly outnumbered those in males, causing older women to be underrepresented in skeletal collections (Walker

1995: 35-36). Walker also adds that post-menopausal females tend to exhibit male cranial features, which, when combined with the higher possibility of a decomposed pubic bone, further biases sex ratios (Walker 1995: 36).

Whether a community held larger numbers of very old men or women will influence the perceptions of age in that community, especially if one sex experiences greater ill health. Great age is easily perceived in the body, through wrinkled skin, grey hair, difficulties in movement and memory, and these changes, today at least, are considered to be unsightly, inconvenient and even abhorrent (Gowland 2007a: 154). Furthermore, it appears likely that greater ill-health (a concomitant of the ageing process) is likely to amplify negative perceptions. While the modern world tends to venerate youth and beauty, greater respect and notice is afforded older males in distinction to older females. This is amply demonstrated in a study of film dialogue: men's dialogue (and by extension, roles) continues to increase until they are 65, while women's work peaks between 22 and 31 years of age (Anderson and Daniels 2016). Moreover, this is despite, or possibly related to, women's greater survivorship.

With modern data (including evidence from the poorest of the poor) suggesting otherwise, can the view that ancient men survived their women be justified? Before this can be explored, the elderly need to be made visible. This paper aims to examine the age at death profiles from three early Anglo-Saxon cemeteries to determine whether life expectancy for females was greater than that for males, or vice versa. Secondly, we will explore the lived experience of these oldest Anglo-Saxons through mortuary analysis, to discover how elderly Anglo-Saxon men and women were perceived and treated; we seek to determine whether older men and women were conceptualised similarly or differently, and whether their social standing in the community was one of respect, indifference or antipathy.

Like many archaeological studies, examination of the concept of age during this period in south-east England has been limited by the difficulties of identifying extreme age from skeletal material. Nonetheless, Crawford (2007b) has explored perceptions of old age, largely through literary sources given the limitations of

skeletal ageing. Literary sources for this period are also problematic, as they almost all come from the later Christian period. Crawford (2007b: 86) convincingly argues that they provide the closest parallels to the earlier period, but this is a time where many aspects of life and culture have changed and we cannot be certain that attitudes to the elderly were not among them. Our approach provides direct evidence from hitherto invisible elderly individuals now identified within cemetery contexts to illuminate aspects of their life and death.

2. Materials and Methods

Longevity in Anglo-Saxon England and elsewhere

Waldron's (1994b) assertion (see above) that Anglo-Saxon men outlived women is not without precedent. As Waldron notes, Brothwell (1972) also presents evidence to support this contention, and these data are included in Table 6.1. While Brothwell's section of Table 6.1 is somewhat eclectic, in that a range of categories from settlements, to periods, to types of grave good inclusions is listed, it does demonstrate that in all but one instance (Bronze Age burials lacking ceramics) the mean age at death of males exceeds that of females. In addition to Brothwell's data, we have added two Anglo-Saxon cohorts, a multi-cemetery dataset (Stoodley 1999: 235) where male mean age at death is higher than female; and the cemetery of Worthy Park, Kingsworthy, Hampshire (Wells et al. 2003), where women appear to survive longer than males. Both of these cohorts include only sexed individuals, which largely removes subadults from the calculations, whereas Brothwell's data includes only individuals aged over 19 years. Hines (2002: 99) also presents data from Anglo-Saxon cemeteries listing the proportion of males and females in various age categories. Summing all samples indicates 22.7% of males occurred in the oldest age category (45+ years), in comparison to 18.7% of females (Hines 2002: 99). However, a greater proportion of females occupy the oldest age category in 4/9 of these same cemetery samples (Hines 2002: 99). It would seem that females are not always underrepresented in the oldest age categories or have a lower mean age at death in Anglo-Saxon samples.

Table 6-1 Average life span for males and females during various British Cultural periods, after Brothwell (1972); plus data from Stoodley (1999) and Wells et al. (2003)

Group	Type	Males	Sample size	Females	Sample size
Neolithic	Chambered tombs	29.8	48	28.1	18
	Unchambered tombs	33.7	37	28.7	10
	All burials	*31.5*	*85*	*28.3*	*28*
English Bronze Age	Burials with beakers	30.9	46	26.6	9
	Burials with food vessels	31.9	17	26.6	16
	Burials without ceramics	31.1	66	**32.1**	30
	Other burials (uncertains)	31.6	71	30.9	17
	Total	*31.3*	*200*	*29.9*	*72*
Iron Age	S English IA	31.9	24	29.9	26
	Yorkshire IA	31.0	41	29.9	22
	Total IA	31.3	65	29.9	48
	Romano Britons	34.8	120	31.9	53
	Dark Ages (Cannington)	33.7	70	31.3	83
Saxons	Town (Winchester)	36.0	74	29.9	50
	Country (General)	34.7	110	33.1	55
Medieval	Town (Winchester)	35.3	126	30.1	81
	Country (Wharram Percy)	35.3	57	31.3	19
Anglo-Saxon	Early Anglo-Saxon dataset[1]	32.7	362	30.26	268
Anglo-Saxon	Worthy Park, Kingsworthy, Hampshire[2]	36.4	30	**38.0**	31

[1]Stoodley (1999: 235)

[2] Wells, et al. (2003: 153)

Numbers in bold indicate cases where female average age at death higher than male

2.1 The Cemeteries and the Graves

Individuals from three pagan Anglo-Saxon cemeteries have been re-aged using the method of Cave and Oxenham (2016) and their full modelled age profiles are illustrated in Table 6.2. The first of these is Great Chesterford, Essex, excavated by Evison (1994) in 1953-54; 31 Great Chesterford individuals were re-aged into 'elderly' age categories from 45-55 years to 75+ years. The second cemetery, Mill Hill, Deal, Kent was excavated in 1986-89 by the Dover Archaeological Group, with a report published by Parfitt and Brugmann (1997). Here, 19 individuals were re-aged into the categories mentioned above. The final cemetery, Worthy Park, Kingsworthy, Hampshire, was excavated in 1961-2 and published by Hawkes and Grainger (2003). This cemetery was used as a case study by Cave and Oxenham (2016) to demonstrate the method of re-aging, with 27 individuals placed in the older age categories. These three cemeteries, although somewhat scattered, share similarities which make them suitable for this analysis. All three were largely used in the sixth century, although there are some graves of late fifth and early seventh century dates. Both Worthy Park and Great Chesterford are mixed rite cemeteries, including cremations among the inhumations (it should be noted cremations are not included in this analysis as neither age nor sex of cremations can be determined with any accuracy). Mill Hill and Worthy Park can both be considered to include some Final Phase burials, although Mill Hill's dates are closer to those of Great Chesterford. The three provide a broad range of burials across the geographical and cultural spectrum of interest.

Table 6-2 Combined Re-aged dataset used in all analyses (n - 174)

Age in years		18-29	30-44	45-54	55-64	65-74	75+	Total
Females	Great Chesterford	12	11	11	5	2	1	42
	Mill Hill	5	5	1	3	2	1	17
	Worthy Park	4	8	4	6	6	5	33
Males	Great Chesterford	7	11	6	5	3	0	32
	Mill Hill	5	4	6	3	1	0	19
	Worthy Park	9	7	7	4	2	2	31
		42	46	35	26	16	9	174

While the method is detailed in Cave and Oxenham (2016), it should be noted that Worthy Park was modelled on a population of Hadza, African hunter gatherers (Blurton Jones et al. 2002). Regarding Mill Hill, Deal, due to the high proportion of young adults in this cemetery, only those above 25 years were modelled on a population from rural India, 1957-8 (Kumar De and Kumar Som, 1964). Great Chesterford was also found to be similar to this rural Indian model (Kumar De and Kumar Som 1964), although all adults above 18 years were modelled. In applying Cave and Oxenham's (2016) method, the differential survival, or otherwise, of subadult remains has no effect on the choice of fitted model, as the model is chosen based on the shape of the adult population; it is important to select models that fit the adult mortality profiles, regardless of differential preservation and/or recovery of the adult remains. While differential tooth wear by sex may have occurred (and isotopically similar diets suggest a common diet for males and females), there is no evidence for this. As there is no clear evidence for a sexual division in dietary habits, dental wear seriation was carried out on combined male and female samples for each assemblage.

To provide as large a dataset as possible, our analysis also includes individuals who were not able to be re-aged, either because they had no scorable teeth for seriation purposes, or because they were not available for study. These individuals were placed in categories defined by their original ageing. Those with open-ended age categories were placed in the category immediately above the specified age. For example, a burial aged at 45+ years is put into the 45-54 age category. If an individual appeared to have lost at least half their teeth, they were deemed to be at least 50-60 years old (as suggested by Mays (1998: 62), and treated accordingly. As perceptions of sex and age are the key aspects being studied, only sexed and aged individuals (whether aged in the original reports or aged in the re-aging process) were included in the mortuary analysis. In this way a dataset of 174 individuals was created, with 92 females and 82 males (Table 6.2).

2.2 The lives of older Anglo-Saxon women and men

Once the re-ageing was completed, the results were used to examine perceptions of age through a mortuary analysis. Statistical analysis by age and sex is difficult due to small sample sizes. While, where appropriate, we undertake some statistical testing ($\chi 2$), for the most part we qualitatively examine aspects of burial practice to determine trends suggesting differential treatment of older men and women.

The identification of normative and non-normative burial is one approach to assessing differential mortuary practices. 'Normative burial rites provide benchmarks against which deviant status may be determined' (Reynolds 2009: 35). As such, non-normative burial is here defined as a grave having characteristics of burial practice which differed from most other burials; it includes burial in a reverse orientation, careless burial (including graves too small or shallow for the individual), the scattering of rubble over the burial and prone burial. Reverse orientation is defined as a burial where the head is facing the opposite way to most other burials – for example, where burial is commonly west-east with head to the west, reverse orientation is east-west with head to the east; Evison (1988: 41) suggests that reverse orientations were given to those not regarded as full members of society like non-adults, those from elsewhere or slaves. Non-normative burial is often interpreted as denoting displeasure, fear or even punishment (Reynolds 2009), but may also relate to post-burial manipulations, parallel practice, graves considered special or merely a non-typical burial for unknown reasons (Aspock 2015; Hofman 2015).

This study is concerned with non-perishable grave goods. While it is likely perishable grave goods (such as plant, fabric and food items) may have been placed in graves, the lack of evidence for such items means they must essentially remain invisible to this analysis. Social identity and status in a society such as this with few written texts are largely inferred through archaeological evidence, especially burials and grave inclusions (Scull 2011). Although imperfect, here we accept that placement of grave-goods and the burial context are an expression of the deceased's and/or the deceased's family identity and thus an indication of societal stratigraphy and power relations (Halsall 1996; Scull 2011).

Defining high status is a matter of judgment; quality does not infer quantity, and it is difficult to determine the status or meaning a particular object had to people in the past. When Stoodley (1999: 91) considered status, he examined the number of grave goods and grave good types, the quality of the item as well as the presence of precious materials. Although precious metals or stones may be considered to be high status due to rarity and beauty, Stoodley (1999: 92) notes that in his database, 82% of such objects were found in female graves; this may suggest that women had a higher status than men, or alternatively, that such items were feminine artefacts. Although such findings may suggest that women were sometimes seen to be buried in 'richer' graves than men, with a greater quantity of goods, a greater variety and more precious or rare materials (for example, Härke 1997: 134), it is debatable as to whether this is indicative of higher status. Other aspects are also important, like the quality of textiles in the wearer's clothes, gifts of food and drink represented by the surviving containers, coffins or other specialised grave construction, as well as the effort needed to dig the grave, evidenced by size and depth (Williams 2011: 253). Thus we do not directly compare masculine and feminine grave goods, but instead compare high status graves for each sex and age category.

When considering high status female goods, differences in female 'fashions' were noted in the three cemeteries under review, so the definition of which burials could be defined as 'very high status' varied in each. The corpus of female goods in each cemetery was closely examined and a judgment made as to the highest status burials for each. At Great Chesterford, women received no silver items, thus more than one gilt or tinned brooch was required, and at least one other significant item before being identified as high status (Evison 1994). Two individuals had bronze brooches only, but these were included because of exceptional other items – in the case of burial 9, a decorated bronze bound wooden bucket, and for burial 18, wrist clasps, a pin, keys, an ivory ring, decorated bronze strap ends and a buckle (Evison 1994). Nine out of 42 female aged burials (21.4%) were included in this group. At Mill Hill, women were buried with up to six brooches, and precious materials were plentiful; thus burial with at least four brooches was required to be included in the highest status

category, along with at least one silver item; five out of 21 burials (29.5%) were thus included in the category (Parfitt and Brugmann 1997). At Worthy Park, tinned, gilt or enamelled brooches warranted inclusion as did silver rings, or a coffin. Seven of 33 burials (21.2%) fitted this prescription (Hawkes and Grainger 2003). Overall, 23.8% of the sexed aged females received very high status burials.

The determination of male high status burials was a simpler matter as the range of goods interred was similar across the three cemeteries. As there were too few of the highest status goods – swords or seaxes – in the dataset, those with decorated spearheads, glass beakers, silver or gilt items, and unusual items, like shears, were also included in addition to swords or seaxes. This type of burial was accorded to 22.0% of the sexed male dataset. The percentage of individuals with very high status goods is similar for males and females, allowing the distribution of these goods throughout the age categories to be illustrative.

We also examined the distribution of grooming items, as it was a category that has showed significant differences between age classes (Cave and Oxenham forthcoming); older individuals were buried with them significantly more often than younger individuals. Grooming items include tweezers, combs, toilet sets, metal tubes interpreted as brush holders and razors.

3. Results

3.1 Longevity

The average adult age at death for this dataset is 46.3 years for females and 43.1 years for males. As can be seen from Figure 6.1, a higher proportion of females than males populate age groups higher than 55 years, while more males died in the younger age categories. The difference is most noticeable in the 75+ age category, which included seven women and only two men. When the three oldest individuals from each cemetery were identified, it was observed that of these nine individuals, seven were female and two were male.

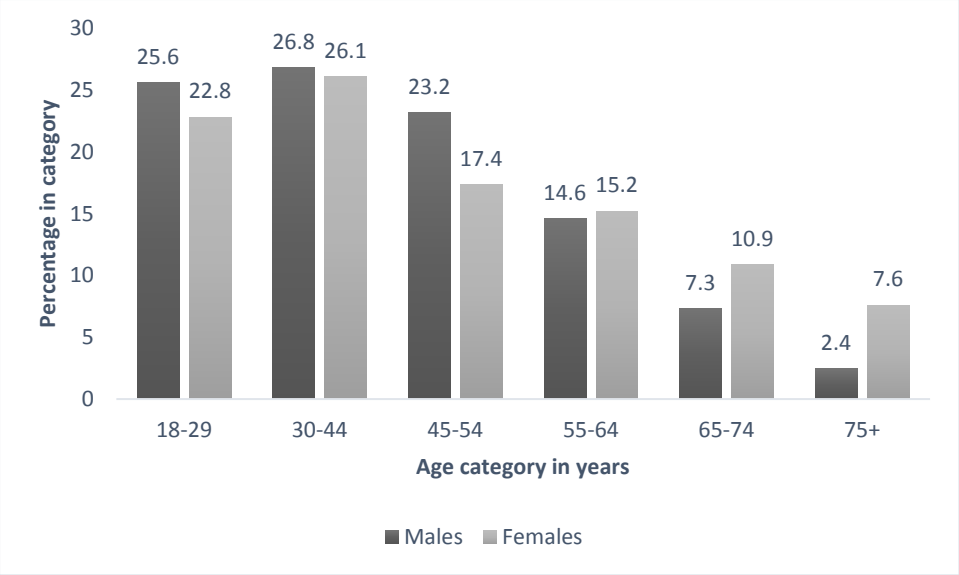

Figure 6-1 Age at death comparison male and female adults for Great Chesterford, Mill Hill and Worthy Park combined

3.2 The lives of older Anglo-Saxon women and men

Although this examination is largely qualitative, where appropriate, statistical tests were run (see Table 6.3). No significant differences were found in the granting of a non-normative burial. Older men are more likely to receive high status goods than middle-aged or young men; they also received high status goods more often than older women, but young females were more likely to be buried with high status goods than young males. In the case of grooming items, old men received them more often than old females, as did middle-aged men in comparison to middle-aged females.

3.2.1 Non-normative burial.

Although not statistically significant, more females received non-normative burial than males in each age category; no male over 65 years (n=8), received a burial that was considered non-normative. We then examined the types of non-normative burials (Table 6.4). While a slightly higher proportion of males were buried in a reverse orientation, women lead all other categories. The two females in the 'Other' category included burial 26A, 18-30 years, from Worthy Park who was buried with an infant between her femora, with the infant's legs still within her pelvic area; chalk rubble was piled over the infant; the other was burial 114, aged 75+ years, from Great

Table 5-3 Mortuary treatment (combined cemeteries) comparisons by age class

Variables	*Age category (years)*				*χ2 results†*		
	0-17 S n(%)*	*18-44 Y n(%)*	*45-64 M n(%)*	*65+ O n(%)*	*Adults v Subadults*	*All categories (Bonferroni)*	*Adults only (Bonferroni)*
Sample size	133	102	64	27			
Deep graves	13 (9.8)	13 (12.8)	11 (17.2)	4 (14.8)	A>S		
Shallow graves	30 (22.6)	7 (6.9)	6 (9.2)	3 (11.1)	A>S	Y<S=M=O	
Buried on side	24 (18.1)	9 (8.9)	6 (9.4)	3 (11.1)	A>S		
Non-normative burial	13 (9.8)	7 (6.9)	7 (10.9)	1 (3.7)			
With grave goods	65 (48.9)	94 (92.2)	52 (80.0)	24 (92.3)	A>S	Y=M=O>S	Y=M=O**
Grooming items	1 (0.8)	9 (8.8)	8 (12.5)	10 (37.0)	A>S	O>Y=M>S	O>M=Y
Girdle items	6 (4.5)	16 (15.7)	9 (14.1)	5 (18.5)	A>S	Y=M=O>S	
Brooches	7 (5.3)	28 (27.5)	18 (28.1)	6 (22.2)	A>S	Y=M=O>S	
Brooch and necklace	6 (4.5)	23 (22.6)	12 (18.8)	5 (18.5)	A>S	Y=M=O>S	
3+ dress items	5 (3.8)	12 (11.8)	7 (10.9)	3 (11.1)	A>S		
Necklaces	21 (15.8)	27 (26.5)	14 (21.9)	6 (22.2)			
Amber beads	12 (9.0)	23 (22.6)	10 (15.6)	5 (18.5)	A>S	Y=M=O>S	
Monochrome beads	18 (13.5)	21 (20.6)	11 (17.2)	6 (22.2)			
Polychrome beads	8 (6.0)	17 (16.7)	10 (15.6)	4 (14.8)	A>S	Y=M=O>S	
'Other' beads	5 (3.76)	13 (12.8)	2 (3.1)	1 (3.7)		Y=M=O>S	
Buckles	7 (5.3)	37 (36.3)	21 (32.8)	12 (44.4)	A>S	Y=M=O>S	
Knives	24 (18.1)	59 (57.8)	37 (57.8)	16 (59.3)	A>S	Y=M=O>S	
Pots	12 (9.0)	18 (17.7)	7 (10.9)	6 (22.2)			
Keepsakes	9 (6.8)	8 (7.8)	6 (9.4)	3 (11.1)			
Any weapon	3 (2.3)	28 (27.5)	16 (25.0)	5 (18.5)	A>S	Y=M=O>S	
Shields	2 (1.5)	12 (11.8)	8 (12.5)	2 (7.4))	A>S	Y=M>O=S	
Spears	3 (2.3)	28 (27.5)	16 (25.0)	4 (14.8)	A>S	Y=M>S=O	

† Results of $\chi 2$ If $p < 0.05$

* S=subadults

Y=young adults (18-44 years)

M=middle adults (45-64 years)

O=older adults (65+ years)

**p=0.0473 but no individual $\chi 2$ was significant at the Bonferroni test

Older men are most likely to receive high status goods. Figure 6.2 illustrates the very high status burials of males and females, demonstrating that while women receive fewer high status burials as they age, men receive more.

3.2.3 GROOMING ITEMS.

Although elderly females receive grooming items at twice the rate of their younger contemporaries, elderly males receive grooming items at three times the rate of elderly females. The types of grooming items buried with various age and sex categories can be seen in Table 6.5.

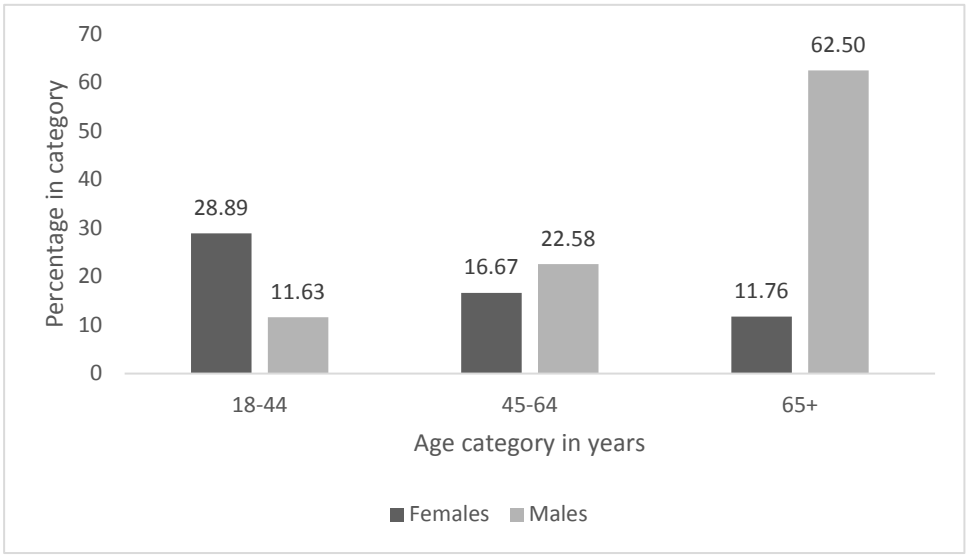

Figure 6-2 Percentage of high status goods found with males and females from Great Chesterford, Mill Hill and Worthy Park

Table 6-5 Grooming items

Age category	Tweezers	Toilet item	Comb	Brush	Total	Number of graves
65+ Females	2	1	1		4	4
65+ Males	5	1			6	6
45-54 Females	2		1	1	4	4
45-54 Males	3				3	2
18-44 Females	0	2	1	2	5	5
18-44 Males	0				0	0
Totals	12	4	3	3	22	21

4. Discussion

4.1 Male and Female longevity

The ability to differentiate between the somewhat old and the very old has allowed us to determine that, like most human populations, Anglo-Saxon women tended to live longer lives than men. This is a significant outcome, because many studies (see, for example Brothwell 1972; Stoodley 1999; Waldron 1994b) have suggested otherwise. This finding is supported by biological studies which show that while most well-studied species have sex differences in longevity, humans appear to be the only species where one sex (in this case, female) has a universal survival advantage (Austad and Fischer 2016: 1022). In fact, as humans have increased their life expectancy, the female advantage has increased (Colchero et al. 2016).

Although supported by such findings, we must consider whether this result is a true artefact of Anglo-Saxon life or whether it is a function of the method of re-ageing. The method, in this instance, is initially based on a seriation of the sample according to relative tooth wear, and while females in general tend to have higher rates of dental caries (Lukacs 2011; Willis and Oxenham 2013b), isotope studies have shown no dietary differences by sex at Worthy Park (Hull and O'Connell 2011: 674) or in a sample which included Worthy Park and Mill Hill (Mays and Beavan 2012: 870). While there are no apparent gender differences in diet, it is still an assumption that male

and female diets were similar in terms of coarseness, and that male and female rates of dental attrition were similar.

In many societies, age grades, and thus time, are experienced differently by males and females (Gilchrist 2000: 325); this study confirms this, finding that time is not only felt differently, but is in fact differently allocated by sex. Life history theory suggests that humans have an evolved life span, and that senescence occurs at remarkably similar times throughout time and across cultures (Gurven and Kaplan 2007). Whether extended post-reproductive lifespans are due to the grandmother effect, the necessity of providing long term care for offspring or human sociality (Colchero et al. 2016; Hawkes 2004; Peccei 2001), it does not explain why longevity is given to women over men, who can also assist their offspring. Post-reproductive lifespan may simply be a by-product of other factors. Hypotheses include a more active female immune system, hormonal effects and the properties of the female extra X chromosome (Austad 2006; Dunford et al. 2016).

The prevalence of older women over older men in Anglo-Saxon society may explain any differential treatment. An important consideration in this is the increased morbidity that older women are subject to, resulting in greater physical and possibly psychological limitations (Austad and Fischer 2016; Freedman et al. 2016). Did the observation that there were many more old women surviving to great age, likely also having greater age-related ill-health, influence the social perceptions of a gendered old age? Older women are perceived more negatively than older men in the world today, a world that increasingly side-lines and dismisses the elderly (Kite et al. 2005; Queniart and Charpentier 2012). The chart comparing high status goods among men and women (Figure 6.2) is surprisingly similar to the findings of Anderson and Daniels (2016) in their study on film dialogue: women receive most lines and high status goods before they reach middle age, while men retain and even increase their status well into old age. Does this suggest that these attitudes, of positive views of the ageing male against negative stereotypes for the ageing female, have been with us for millennia?

4.2 The lives of older Anglo-Saxon women and men

4.2.1 NON-NORMATIVE BURIAL.

It is notable that a higher proportion of females received non-normative burial, regardless of burial category. Further, in the oldest age category no males were buried non-normatively. The oldest females were less likely to be given non-normative burial, while Middle-aged females were the most likely to be interred non-normatively. Assuming at least some of these non-normative burials forms have negative connotations, such as those buried prone (see Meaney 1981: 249-282; Reynolds 2009: 73, 90), female status arguably increases from Middle-age to Old-age.

Gowland (2015) notes that elder abuse is underreported and underdiagnosed today, with 2-10% of the elderly being abused physically, emotionally and financially. She also notes that today, old age conditions and perceptions are dependent not only on factors of social status, health, disability and wealth, but also gender; this is perhaps highlighted by the fact that all archaeological examples she examined were female (Gowland 2015: 2; 2016: 76, 81-84)(Gowland, 2015: 2, 2016, 76, 81-4. Smith and colleagues (2016) recognise that a percentage of the ancient elderly must have suffered from dementia, a condition which may increase the likelihood of abuse. While there are no physical symptoms of elder abuse here, the only prone burials (and arguably deviant) in these three cemeteries are female.

Grave 103 at Great Chesterford, was a middle-aged woman (45-54 years) buried face down with her finery deposited in the corner of the grave, probably in a bag. The woman was laid close to the wall of the grave, her right arm underneath her body, with a dark stain occupying the space beside her. This burial possibly belongs to a group suggested by (Meaney 1981: 249-262) to be that of ‘cunning women’, well-furnished graves which include amulets and/or bags of small non-functional items, perhaps for the employment of magic, healing and divination (Reynolds 2009: 74). Her grave, at 1.22 metres deep, is deeper than the average depth at Great Chesterford (1.04m). A deep grave may be indicative of a person being worthy of greater effort in digging it, or it could also be interpreted as a means of preventing

revenancy (Hohmann 2004; Tsaliki 2008). (It should be noted that in considering any grave depth, to take into account different soil matrices, comparisons were made only with other graves in the same cemetery). It seems apparent that this middle-aged woman gained the displeasure of her community, whether it was for being cunning, condemned as a witch, feared for her supposed powers, or other reasons, we cannot say.

The other two prone burials are graves 43 and 78 at Worthy Park. Neither contained grave goods. (Hawkes and Wells 1975b) suggest that burial 78, a 13-15 year old individual, was a possible rape victim, evidenced by femoral injuries, who went to her grave with feet and hands bound. Although some of their overreaching inferences are regarded as conflations and wild generalisations (Reynolds 1988: 715), there is no doubt that a prone burial with bound feet and hands suggests either extreme punishment or the need to restrain the deceased. Grave 43, a 25-30-year-old individual, who may also have been bound, was carelessly placed in a too-short grave. Notwithstanding, both graves were dug 36cm into the chalk matrix, well within the average range.

Despite both sensible interpretations and wild generalisations, it appears notable that these prone burials are all female. Although a much wider survey is necessary to determine whether this is a global trend, (Reynolds 2009: 72) found 115 prone burials in 60 Anglo-Saxon cemeteries: 37 males, 52 females, 17 unsexed adults and nine juveniles. Whether these individuals were buried this way for improprieties related to their biological sex, gender or general perceived misbehaviours is impossible to say. There is clearly a recognisable category of prone females in the early Anglo-Saxon burial corpus and we propose that femaleness, especially female power, as judged by a masculine society, is a possible reason for a dishonourable (including prone) burial. Although no elderly individuals were buried this way in this sample, we consider that this is perhaps symptomatic of the control and judgement imposed on women by men.

4.3 The Oldest Individuals and their Burials.

While a simple quantitative analysis on a present/absent basis may suggest little difference between the treatment of younger and older individuals and of males and females, looking a little closer at qualitative aspects of burial practice tells a different story. If we consider the cases of the three oldest individuals from the three cemeteries, not only do we see the greater representation of women in this cohort, but also differences in the relative mortuary treatments of these individuals.

The oldest individual buried at Worthy Park was burial 49 (Hawkes and Grainger 2003). He was a male interred in a grave with a chalk pillow for his head, supine in a west-east orientation. Beside his head was a gunmetal bound wooden bucket and an iron spearhead, a seax was placed beneath his left arm and a shield covered his pelvis. There can be no doubt that this was a high status burial. Also aged in the 75+ age category, the fourth oldest in the cemetery, is another very high status male, burial 50, interred with a spearhead as well as a decorated iron and copper alloy object, decorated tweezers, a buckle and a knife. These two high status male burials stand in contrast to the two oldest female burials from Worthy Park, second and third in the seriation, who received very different burial treatment.

Burial 42 was the grave of an old woman with a few skull fragments of a subadult beside her (Hawkes and Grainger 2003). Her body was close up against the side of the grave, presumably to make room for the unaged child. Although she was buried in a supine positon, her legs were bent to the left because she was placed too near the end of the grave; her only grave good was a single amber bead. Burial 39 fared a little better; she was also buried supine, in a large grave with a decorated tin or tin-lead coated bronze pin on her upper chest, a pair of iron tweezers suspended from an iron ring and an iron knife. These women were accorded furnished burials, but their treatment and status fall somewhat short of that afforded male burials 49 and 50.

The cemetery at Mill Hill tells a similar story (Parfitt and Brugmann 1997)(. The three oldest individuals were all women, two of whom had a single brooch (along with

other items), the third while lacking a brooch had a strap end and six beads among other commonplace goods. As this was in a cemetery where women were buried with up to six brooches, many of them silver and often with garnets, it can be seen that these three old women had somewhat depauperate graves. The oldest male from Mill Hill, while not receiving a very high status burial (as determined by our definition above), was buried with a spearhead and tweezers, again suggesting preferential treatment for old men, although the gap is not perhaps as wide as at Worthy Park.

At Great Chesterford, the oldest burial, a woman, received a non-normative burial. Although she was buried with at least two non-matching small long brooches, six beads and a bone pin in a high status section of the cemetery, her remains were dug up and scattered throughout the fill of the grave of a young, very high status man; he was buried with a decorated spearhead, a hone, a purse mount and a decorated strap end with a silver top plate. There are few graves in the cemetery of Great Chesterford intercut by others, and then only to a small extent, so this woman's grave, which was completely excavated, is exceptional. The two burials both come from the same phase of the cemetery, which means that they occurred within fifty years of each other. Even taking into account that fifty years is a long time in human terms, this suggests either that this woman was either not important enough to remember, even though she lived to an older age than anyone else in the community, or if remembered, she was not considered worthy of respect in the replacement of her remains. If she was dug up accidentally, her bones could have been replaced neatly in a corner, or reburied elsewhere; instead, they were scattered carelessly throughout the fill. However you look at it, this is a woman accorded neither respect nor high status.

The second oldest in the Great Chesterford cemetery, burial 112, also female, was buried crouched on her side with a bronze pin, an iron ring, and a key fragment in a nondescript part of the cemetery. Although this burial has not been recorded as 'non-normative' (see Reynolds, 2009: 63-64 for a discussion of crouched burials), she is the only adult buried in such a tightly crouched position in the cemetery; her grave

is half the size of most adult graves. This grave stands in contrast to the third oldest individual, from grave 140, a weaponed-male, buried in a large grave surrounded by children, with a decorated spearhead, an inlaid buckle, tweezers and a purse mount. Stones line one side of the grave, and there is also a stone at his head.

Our results suggest that while women tended to live longer in the communities represented here, their status was noticeably less than that of the oldest men. One possible reason is that for as long as statistical data has been available, men have higher mortality rates, but women greater morbidity, meaning that even though they live longer, their quality of life and general health is much poorer (Freedman and Spillman 2014; Verbrugge 1985: 156-157). Despite longer lives, their number of active years is no greater than those of men (Freedman et al. 2016: e5) and this may have affected their perception by others. Were these older women disabled, disgruntled and/or ill-favoured? Was the apparent distaste for elderly females a function of reduced community engagement? Had they exhausted their social capital within their respective communities? Did the myriad physical manifestations of ageing single them out for ill treatment? It is perhaps relevant that the various physical manifestations of ageing in females (but not males) inform the popular culture image of the witch (Briggs 1996; Seso 2012).

Is this explanation, while possibly providing some clue to the treatment of elderly women, enough to explain the lack of high status female burials? The only female in the 75+ age category to receive a very high status burial was buried in grave 77 at Worthy Park (Hawkes and Grainger 2003). She was buried supine with a tinned copper alloy quoit brooch worn on her left shoulder, a necklace of beads and a pendant, a decorated copper alloy belt or purse fitting plus other objects. There was another possible brooch, broken and unworn, in a group with other objects, perhaps in a bag. The evidence provided by this woman suggests that not all women were regarded relatively negatively or neutrally, and that some attained or retained high status in their old age.

Although a woman is a social actor in her own right and able to negotiate her own space in society, her position is ultimately limited by the demands of her society; in a society such as this a woman's place was defined by men (Halsall 1996: 19). Anglo-Saxon men were buried with symbols of martial power, such as weaponry, while women received symbols of beauty in dress accessories; beauty, for both men and women declines with age, but only in women is this the key identity displayed in the burial ritual. Ageing thus brings women up against conceptions of femininity requiring youth and consequently beauty (Perrig-Chiello 2001 cited in Queniart and Charpentier 2012: 987). The contrast between male and female, youth and elderly in beauty is highlighted by older males outperforming older females and all those younger in the placement of grooming items.

Many studies have examined feminine dress accessories and their roles in constituting identity and communicating messages about the wearer in death and life (e.g. Martin 2011; Suzuki 2000) and these aspects of brooch wear are not denied; however, brooches and other feminine dress accessories like beads and necklaces, pendants, pins, wrist clasps etc are all items which are also employed in highlighting and/or enhancing beauty. Today, beauty is still considered a major aspect of feminine identity (see discussion in Lazar 2011), and these items suggest that this was also so in this period.

Women being buried with fewer dress accessories, thus, perhaps reflects a loss of perceived beauty, but also its transfer to the next generation; this is most evident at Mill Hill, where young women received up to six highly decorative brooches, whereas the two oldest women received one each, and one of these was unwearable (Parfitt and Brugmann 1997). Although by the time these women died, fashions had changed and a single brooch had become the norm, the Mill Hill evidence suggests that these two women may have owned multiple brooches when young. This pattern is suggestive of the passing on of brooches and other dress accessories, possibly to daughters or daughters in law; alternatively these daughters and daughters in law made sure their elders were buried in the latest fashions.

Giving away one's brooches is contrary to the thesis of Martin (2012) who examines the repair, customisation and re-use of Anglo-Saxon brooches, and contends that brooches were the inalienable possession of the owner and must therefore be repaired when broken and not passed on to someone else on death. Although there may be justice in this conclusion, it does not take into account the numbers of brooches buried with individuals peaking during young adulthood, then declining with age, a pattern evident here. Martin (2012) does not discuss unusable brooches found in purses or bags in graves, such as that from Grave 95 at Mill Hill (Parfitt and Brugmann 1997); the fact that these brooches were kept, even if not on display, suggests that they retained importance to the individual who owned them, at least in the eyes of those who buried them.

When interpreting burial assemblages in terms of social identity, it should be remembered that as people get older, not only does their identity alter, but so too does that of the principal mourners (Gowland 2006; Sayer 2010). A child may be buried by their parents, but the elderly are buried by their children and grandchildren. In a study that included Mill Hill, Deal Sayer (2010) uses high status burials to indicate possible heads of household, suggesting that the right to a particular furnished burial was transmitted to one person or a pair of people in a given generation or unit of social time. The social identity – of household head or slave, warrior or beauty– in the grave thus refers not to a person's own self-perception but is representative of the group perception (Williams and Sayer 2009: 1). These moving, shifting identities may have been initially created by the individual weapon bearer or brooch wearer and their interaction with society, but the final graveside expression comes from the societal groups that envelop the individual from birth onwards (Williams and Sayer 2009). They are not static but rooted in actions of individuals and groups; material culture is central in the 'creation, negotiation, transmission and performance' of social identity (Williams and Sayer 2009: 2), and in a burial this creation, negotiation and transmission is in the burial tableau.

Härke (1990) clearly outed weapon burial as a symbolic artefact rather than a true signifier of the grave of a warrior. He found no correlation between weapons in graves and historical evidence for war, and no correlation between the ability to fight and the presence of the tools of fighting (Härke 1990: 28-33). Stoodley's (2000) finding that the majority of weapon burials are for those 20-25 years, with 41% of males in this group buried with a weapon is somewhat contrary to Härke's thesis; however, Stoodley's oldest age category is 40+ years. Our study, with the advantage of extended age categories, finds that 100% of males over 75 years and 63% of males over 65 years were buried with weapons, suggesting a symbolic role. Although the idea that there is a loss of beauty with increasing age is seen in the modern industrialised world, the same cannot necessarily be assumed for the past cultures. Notwithstanding this, males keeping and even increasing their martial symbolism is in contrast to feminine burials where the symbolism of beauty is present among the young and beautiful but absent from the aged "beauty-free" body suggesting that reality is expressed by the symbolism.

5. Conclusions

In Anglo-Saxon burials, biological sex, gender, age and status are frequently seen to be linked and their expression largely discussed by archaeologists in mortuary contexts (Lucy 2011). The resulting assumption is that these expressions are also evident during life: a funeral is a deliberate act and a grave assemblage is put together by mourners who may want to emphasise some aspects of the deceased's life and play down other facets. Earlier work in this area, especially by Crawford (2007b) and Stoodley (1999; 2000), has been hampered by the difficulties of ageing older individuals; the ability to identify the invisible elderly has allowed us to more clearly identify the treatment of the elderly in death.

We have argued that, similar to today, women in general lived longer than men in Anglo-Saxon times. We have also shown that, despite or because they lived longer, older women on the whole were shown less respect in death than their male counterparts. While only one of the seven women aged over 75 years received a high

status burial, both of the oldest men did. In addition, while old women generally received fewer items in their grave than younger women, especially with regard to high status goods, men generally received more.

Although older females and males were equally likely to receive a non-normative burial, older men received the lesser forms of non-normative burials and only women were buried prone; one very old woman was completely dug up and her bones scattered throughout the fill of a young man. Conditions which generally might result in a lesser burial, like a bad death, servitude or slavery could equally apply to both men and women, suggesting that the feminine gendered individual was more likely to have acquired the status requiring a non-normative burial.

The lack of high status grave goods and the greater likelihood of receiving the most noticeable forms of non-normative burial suggest that old men and women were perceived very differently in Anglo-Saxon times. It appears that ageing in Anglo-Saxon England was a gendered process, with fewer older women as respected as their male counterparts.

Acknowledgements

Thanks to the Duckworth Laboratory, Cambridge and to the University of Southampton for access to the Worthy Park and Great Chesterford skeletal material and the lab space in which to examine it. Also to the Dover Museum for access to the Mill Hill material, space to examine it and to Geoff Halliwell for assisting me with that investigation. This research is supported by an Australian Government Research Training Program (RTP) Scholarship

Chapter 7 Multiple Liminalities in Early Anglo-Saxon England: Age, Gender and Religion

A lady of a 'certain age', which means

Certainly aged.

(LORD BYRON 1824)

In Chapter Six, the relationship of sex and gender to the ageing process in Early Anglo-Saxon England was examined. It was found that, like today, ageing was also a gendered process in that period. The ability to determine which individuals survived into old age helped to bring about the discovery that despite earlier evidence, based as it was on ageing methods biased against the elderly, women tended to live longer than men in Early Anglo-Saxon England.

In spite of their extra allocation of years, or even perhaps because of it, in addition to the likelihood that women in the past, like women of today, endured greater morbidity than men as they aged, women were less likely to be given high status burials in the three cemeteries examined. Whereas men appeared to maintain or even increase their status well into their sixties, the status of women declined soon after early middle age. However, these findings were general trends only; the elderly in Early Anglo-Saxon England were a diverse cohort and some women were granted exceptional burials while some men were buried in poverty.

In Chapter Seven, the examination is tightly focused on two elderly women buried in Mill Hill, Deal, Kent. These two women were the oldest individuals in the cemetery, and were buried in a high status, masculine area of the cemetery. They were also probably the last two individuals buried here. These factors, as well as the effects of great age on skeletal sex markers, suggest that these two individuals, who display

multiple liminalities in their burials and identities, may have been the last pagans on Mill Hill.

Publication Information

Multiple Liminalities in Early Anglo-Saxon England: age, gender and cosmology: in Lillehammer, G. & Murphy, E. (eds.), Across the Generations: The Old and the Young in Past Societies (provisional title) AM-UiS.

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Current Status:

Accepted July 2017; to be published in 2018

Declaration of authorship:

Formulation of arguments in manuscript; composed overall question, background research, statistical analysis, discussion and conclusion.

Signed

Christine Cave

Composed title, refinement of focus and arguments, contributed to overall question and methodology, argument formulation and editorial supervision of paper, rewrote sections of manuscript

Signed

Professor Marc Oxenham

NOTE ON ACCEPTED PAPERS

Although accepted, this paper has not yet been formally published. All text, figures, tables and captions are included in this chapter. References can be found at the end of the thesis.

MULTIPLE LIMINALITIES IN EARLY ANGLO-SAXON ENGLAND: AGE, GENDER AND RELIGION

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KEY WORDS

Mortuary Archaeology
Archaeology of Religion
Gender
Old Age
Pagan
Christian

Acknowledgements

We wish to thank staff of the Dover Museum, Dover, Kent, who provided access to the skeletal material and the space in which to examine it. Geoff Halliwell, of the Dover Archaeological Group, an excellent lab assistant; Keith Parfitt, also of the Dover Archaeological Group, who led the excavation of the Mill Hill site, provided photographs (Credit: Dover Archaeological Group) of burials 94 and 95. Anna Willis (James Cook University) who provided the field anthropology interpretations of burials 94 and 95. Simon Mays (Heritage England) for his cranial sex estimation findings for burial 94. This research is supported by an Australian Government Research Training Program (RTP) Scholarship.

Abstract

Liminalities and ambiguities can be useful in identifying complex patterns in many areas of study. This paper examines two elderly burials from the Anglo-Saxon cemetery of Mill Hill, Deal, Kent in England. These two individuals display multiple liminalities, particularly with respect to their advanced age, gendered identities and in their potential religious beliefs. Their advanced age suggests that they spent the last years of their lives in the knowledge that they were close to the ultimate transition: death. Moreover, being quite elderly has likely affected their gendered identities, rendering them muted, altered and/or de-gendered. The combination of their elderly status, their physical position in the cemetery and the phasing of their graves suggests that they were the last two individuals buried at Mill Hill, possibly some considerable time after it had gone out of general use. Their graves are dated to the Final Phase or Conversion Period of Early Anglo-Saxon England, when, among other changes, Christianity begins to become the dominant religion; this and the presence of an unexcavated cemetery nearby, with goods pointing to a later date than this one, suggests the possibility that these two individuals were the last pagans in their community. These are all factors which point to the multiple liminalities of these two individuals.

Introduction

Liminality is existence on the threshold of another reality. It is an ambiguous space, where two or more worlds may merge, a place of multiple inclusion and/or exclusion, and where opposites may co-exist. Liminal spaces can be formed by nature (as in the sea shore, alternatively wet and dry), forcing those who exist there to deal with both realities. They can also be the result of human activity and thought; humans define their societies through their differing cultures, philosophies, and truths, thus creating liminal spaces within and without their communities.

An exploration of liminality can illuminate hitherto shadowy aspects of a society. This chapter aims to explore liminal spaces and transitions with respect to Anglo-Saxon funerary rituals. Specifically, we examine and explore the evidence for multiple liminalities among two burials from the Anglo-Saxon cemetery of Mill Hill, Deal, Kent. Before we can examine these burials, we need to explore the meanings and uses of liminality. Then, to contextualise these burials, we will examine the cemetery, its meaning, structure and chronology as well as those interred within it. Following this, we identify two somewhat unique individuals who, due to their multiple liminalities — their placement in the cemetery, their extreme and thus liminal age, and their gendered identities — are illustrative of multiple aspects of their culture. We will then discuss the changing religious beliefs of the people of Mill Hill, and the multiple liminalities uncovered in this process.

Liminality: Life, Death and Other Passages

The concept of liminality was originally formulated by van Gennep (1960) over a century ago when considering rites of passage. It would be another half century before Van Gennep was rediscovered by Turner (1964), paving the way for a vast and diverse liminality literature. Van Gennep suggested humans create distinctions between groups of individuals in terms of class, status, ability, qualifications and so on. A single distinction creates two categories of being, say ‘in’ and ‘out’, which in turn creates a third, ‘between’ (Metcalf and Huntington 1991: 30); the creation of distinctions facilitates events or ceremonies which enable individuals to move from one state to another – these are the rites of passage (van Gennep 1960: 3). Such rites

may include the passage from childhood to adulthood, from unmarried to married, from apprentice to master and so on, where the previous identity ritually 'dies', and a new self is 'born' (Metcalf and Huntington 1991: 30). Van Gennep (1960: 11) observed that these transitions were themselves subdivided into rites of separation, rites of transition and rites of incorporation. It is with rites of transition, or liminal rites, that an individual moves on from their previous status, but prior to incorporation into their new status they reside in a liminal state, neither one nor the other, 'betwixt and between' (Turner 1967: 93-111).

Van Gennep saw universal similarities in ceremonies across cultures, especially with respect to liminality, and was able to relate these to the world around the ceremonial actors: 'the universe itself is governed by a periodicity which has repercussions on human life, with stages and transitions, movements forward, and periods of relative inactivity' (van Gennep cited by Thomassen 2009: 12). Victor Turner (1967: 6), on recognising van Gennep's insight, liberated his rites of passage and introduced these ideas into archaeology and noted that the individual in the liminal period is 'structurally, if not physically "invisible", with a dual character, essentially neither one state nor the other, and yet of both states. This liminal condition is an ambiguity and a paradox, confusing all states; it is an essentially unstructured space, which is also de-structured and pre-structured, and one that is frequently regarded as limitless and unbounded (Turner 1987: 7-8). He also noted that often this in-between space has a negative tint - of death, decomposition or other pollutant (Turner 1987: 7-8).

The negative, polluting expression of liminality is expressed where objects and people are out of place or do not fit into society's constructed categories (Jackson 2005: 333). The idea of margins being dangerous and polluting is explored by Douglas (2003); liminal substances issue from the body – including spit, blood, milk, faeces, urine, tears, sweat – and are often but not always regarded as polluting. Death is also a time not only of loss and separation, but also a time of fear: the corpse itself can engender fear and pollution; decomposition is a liminal state (Metcalf and Huntington 1991: 23; Turner 1987: 53). Similarly, morality, creates borders of

behaviour from which errant behaviour, or moral pollution, can escape, which must be mitigated through ritual cleansing (Douglas 2003).

Van Gennep's work is particularly visible in anthropological writing, often used in exploring a range of topics, including sex and gender (e.g. Mageo 1996), migration (e.g. Wilson 2017) and eating disorders (e.g. Eli 2017). The state of liminality can be experienced by single individuals, groups of individuals, or whole societies over time periods ranging from moments to aeons, and confined to limited and specific places like doorways or lines or may cover larger areas, or even countries or continents (Thomassen 2009: 16). These liminal expressions of people, time and space can function singly or in combination and are not necessarily related to a recognisable or identifiable rite of transition; there can also be differences in scale: the degree of liminality experienced is related to surrounding structures (Thomassen 2009: 17-8)

Liminality has been co-opted by a diverse range of disciplines (Thomassen 2009: 18). For instance, Psychologists and therapists recognise and use liminality in individuals, whose experiences may be felt and recognisable, or imperceptible and subliminal; some individuals may be diagnosed as 'borderline' due to the nature of their condition (Thomassen 2009: 18). In literature, post-modern and/or post-colonial writers create characters from the interstices, between common identities, expressing cultural hybridity (Thomassen 2009: 18). Other fields using liminality include, but are not confined to, business consultancy (e.g. Thomassen 2009; Czarniawska and Mazza 2003), large scale societies and modernity (Szakolczai 2003; 2009), and organisational settings (Beech 2011).

Beech utilised the concept of liminality for use in organisational settings, where identity is being constructed and reconstructed. Liminality is utilised to classify people, occupations, hierarchies, organisations, events and even spaces (Beech 2011: 287). Self-identity is an internal self-view, constituted through social structures and discourses, but liminality is created where structure and agency intersect (Beech 2011: 286). Identity reconstruction can occur throughout life and work: e.g. a student may change from an undergraduate to a postgraduate, but in that new position the

reconstruction may be incomplete as the student suffers imposter syndrome thus making their self-identity liminal (Beech 2011: 286-7). Changes in identity also imply changes in meaning, both within the individual and from society; whether internalised or external, these dialogues also result in change, which again, creates liminal spaces (Beech 2011: 288). The changeable nature of identities, the multiple meanings that they can present and any negative consequences can be emphasised and illustrated by the concept of liminality (Beech 2011: 287). Change can disrupt an individual's sense of self and their place within society (Noble and Walker 1997: 31); thus, any reconstruction of identity result may result in liminality (Beech 2011: 287).

The idea of liminality is not restricted to human actors, although it is humans who categorise in this way. Particular animals can be perceived as liminal: the beaver moves between water and land; the bat is not a bird, yet flies; the bear lives on the earth and sleeps in the earth (Emerson 2003: 76). Figurines can be interpreted as liminal objects; in ritual, transition can be anchored into a compelling reality when expressed in (tangible) images (Haaland and Haaland 1996: 297). Humans also see the landscape, whether natural or created, as having liminal spaces, like the sea shore, or a demilitarized zone between warring parties (see, for example, papers in Andrews and Roberts 2012).

Although liminality can identify and embrace all these concepts, it is its relevance to death and mortuary practices that is explored in this chapter. Rituals, including ritual cleansing and rites of passage are enactments of social relations and their purpose is to provide a visible, tangible performance for the cohesion of society. Rites of passage involve a structural 'death' and a 'rebirth' of an individual, creating and recreating the community; shamans who manipulate the dead through death and rebirth for example, in the contexts of long barrows, are able to move and operate in the liminal space between the worlds of the dead and the living (Emerson 2003; van Gennep 1960).

Thomas (2000: 662) sees British Neolithic long barrows and megalithic tombs as places of transition and liminality; these monuments were places where personhood

was dissolved and recreated through manipulation of the skeletal remains; these practices not only memorialised the ancestors but also established their rebirth and presence in the surrounding landscape. Manipulations like these are about rebuilding the social, cultural and spiritual fabric of a community that has been damaged by the death of a community member (Emerson 2003: 74; Metcalf and Huntington 1991: 33-7). In these communities, group identity revolved around common social practices and the surrounding landscape as the group moved seasonally between places in regular, predictable cycles (Thomas 2000: 665). The situation changed after c. 3000 BC, as identity became more elaborate and more asymmetrical, and the monuments were then used to exclude some and include others (Thomas 2000: 665). The dead were moved from the liminal space between life and death, and were relocated spatially into the past, by the closing of long barrows and the move to single graves (Thomas 2000: 664-65).

In Ireland, the powerful Catholic Church regulated who could and could not be buried in consecrated ground; those denied this rite were unbaptized infants, suicides, the mentally disabled, shipwrecked individuals, criminals, and strangers (Murphy 2011: 409). *Cillini* were burial grounds established for unbaptized and stillborn children as well as other categories of outsiders (Murphy 2011: 409). Research on *cillini* has related these burial grounds to the liminal phase of the rites of passage, considering the ambiguity of the dead child, with the exclusionary nature of these burial grounds reflecting the spiritual liminality of a dead infant denied heaven (e.g. (Finlay 2000: 408)). While noting that those buried in *cillini* have been rendered marginal by the teachings of the Church, Murphy (2011) asserts that this fails to take into account the attitudes of those who bury these children, especially with regard to the emotions involved. Murphy argues that rather than marginal, unrecognisable places, parents have selected unforgettable places to bury these children, places that would remain in their thoughts, despite the liminal status prescribed by the Church (Murphy 2011: 417). *Cillini* have been located with pre-existing monuments and abandoned ecclesiastical sites in contrast to infanticide dumps like privies and dung heaps (Murphy 2011: 417). The choice of 'marginal' bogs or woodlands would ensure that agricultural activities would not disturb the remains (Murphy 2011: 418). Thus, it can

be seen that although rendered 'liminal' and out of place by the hegemonic Church, individuals took care to bury their loved children in prominent places, suggesting that burials were ambiguous in that the children were both loved and excluded, barred and buried. Although liminality was prescribed by the Church, it was resisted by the parents of these dead children.

In early Anglo-Saxon England, while outcasts are generally included in community cemeteries, analysis by Reynolds (2009: 231) suggests that such individuals, those buried prone, decapitated, stoned or amputated, are found at the edges of those community cemeteries or family clusters; those not on the edge when the cemetery went out of use may have been on the border when buried (Reynolds 2009: 231). Later, as the Anglo-Saxon kingdoms gradually emerged, isolated deviant burials and judicial execution cemeteries are found at the limits of administrated territories, major boundaries and crossroads. Although not all 'deviant' burials are found on borders or at crossroads, burials in these places are deliberately liminal burials. While early burials on the edges of communal cemeteries may be commonly understood examples of 'community punishment', later burials were demonstrations of the elite's ability to control and regulate their populations, and display centralised power (Reynolds 2009: 236-38). Positioning of 'deviant' individuals on borders is suggestive that these individuals were outside the community of the living and of the dead; the liminality can perhaps be considered a description of their nature, as well as an exclusion from both the communities of the living and the dead.

These human-created liminalities can come in many forms. A community's religion defines the belief systems and provides a range of regulatory mechanisms; entities which tend to contain and corral, thus resulting in the creation of liminal spaces at the edges of these enclosures. These spaces may relate to visible physical aspects of a person like age, sex or ethnicity, aspects which are etched on the body and its associated material culture and obvious to the relevant beholder. These liminalities can also be culturally constructed – relating to behaviour, belief or political identity. An important instance of these structures is religious belief.

As humans, we are cultural animals, meaning our behaviour cannot always be explained directly through natural or evolutionary perspectives (Reicher 2004). Religious beliefs, in their various forms, are arguably the defining blueprint of any culture, regulating thought, behaviour and meaning. It is most likely to be a long-lived entity, surviving for generations, and in the case of 'world religions' like Christianity, Judaism, and Islam (Hefner 1993: 4), perhaps for millennia. An individual is born into a religion, lives that religion, passes it on to their descendants and dies in it. A societal religious change is a major undertaking and a rare occurrence and when such a change occurs it creates liminal spaces.

Liminal spaces also exist in the context of gendered communities. Gender is often seen as a binary entity, but with critical examination that duality disappears (Ghisleni et al. 2016). Gender liminality can be viewed not only through the prisms of homosexuality, hermaphroditism and gender dysphoria but also through the perceived sexless identities of particular occupations or age cohorts (Gowland 2002: 31; Drescher 2010; Hird 2000). Although the binary feminine and masculine are frequently seen as essential, and probably have been seen as such for millennia, this is not always so; some societies do not distinguish gender and the biological sex of their children until puberty (Godelier 2011), while others allow gender shifting unrelated to sex when the situation requires it (Ghisleni et al. 2016: 771). Furthermore, ambiguous gender identities can also exist through societal attitudes, recognised or unrecognised (Martin 2004). Whether deliberate or subliminal, both infancy and old age can also be viewed as de-gendered (Silver 2003).

Infants and the elderly feature in another liminality, which although related to religion and gender, is worthy of its own designation. The liminality of age relates to an individual's nearness to a state of non-existence — those newly arrived in the world, and those likely to leave it soon: such individuals are of this world now, but their proximity to the world beyond (and before) may engender fear, wonder or antipathy (Welinder 2001: 170). This other 'existence' may be the 'afterlife', or another state created by the culture or religion to which they belong, whose construction fulfils a need to understand the great questions of life, existence and

death. Those close to this transition may be feared, revered, both or neither for this very liminal proximity and any presumed traits they may hold due to this recent or forthcoming contact. This is the liminal space of age.

The Cemetery

Mill Hill, Deal, Kent

The Mill Hill cemetery was excavated 1986-1989 by the Dover Archaeological Group under the direction of Keith Parfitt, ahead of development of the site for housing (Parfitt and Brugmann 1997). As suggested by the name, the cemetery sat on high ground commanding much surrounding countryside as well as views over the sea; the burials were arranged around a prehistoric ring ditch surrounding a barrow, since ploughed away but apparently visible at the time. This monument sat in the midst of Iron Age burials, possible satellite barrows and Roman ditches, quarries and graves (Parfitt and Brugmann 1997). This position, imbued as it is with the past power of the landscape and its people, links the cemetery, and thus the community, not only to the surrounding countryside but also to the authority of those who went before them (Price 2010: xv).

The cemetery is dated, largely through brooches and dress accessories, to the period AD 500-590 (Parfitt and Brugmann 1997: 100). Where grave inclusions were undatable or absent, the excavators also used grave positioning or placement to infer dates where appropriate. In addition, selected later phase burials were utilised by Hines and Bayliss (2013), including radiocarbon dating of those burials, in their search for a new chronological framework for the later part of the Early Anglo-Saxon period. Their chronological findings do not differ greatly from those of the original report. We note that Parfitt and Brugmann's (1997: 124) report states that age and sex determinations were not influenced by associated gendered grave goods, a practice that has been common in the past; however, the particular methods used for age and sex estimation were not reported.

Spatial Patterning

As noted earlier, the Anglo-Saxon cemetery focused around a Bronze Age ring ditch; graves were placed on, in and next to both the north-east and south-west sides of the ditch. The original report labelled these two groups Plot A and Plot B (Parfitt and Brugmann 1997: 13-17), but this simple division conceals finer grained spatial patterning evident in the cemetery. Consequently, we have created five discrete plots, labelled 1-5 (Figure 7.1) that can be identified by a combination of spatial, orientation and temporal (phase) factors.

Plot 1 encompasses those graves on the south west side of the barrow ditch which are oriented south-west/north-east, which differentiates them from the Plot 2 graves. Plot 1 graves derive from the earliest phases of the cemetery and they sit in three parallel rows oriented towards the ring ditch.

Plot 2 covers the same geographical area, but the graves are oriented generally east/west; many of which have disturbed earlier Plot 1 graves, suggesting a sufficient time gap between the burial phases to have obliterated memory of the earlier (Plot 1) graves.

Plot 3 encompasses the graves on the north-east side of the ring ditch, sitting inside, on and outside the ditch. Almost all these graves are placed in distinct rows that radiate towards the barrow centre without intersecting each other. Only Burial 10, which alone in this Plot comes from the latest phase of the cemetery, does not point towards this centre. Burial 10 also cuts through two other burials (Burials 71 and 72), again suggesting a certain amount of time passing between the burials in this plot.

Plot 4 is a group of six graves inside the ring ditch situated between the east and south west of the centre. Four of these graves are oriented roughly north west/south east and two south west/north east and they are all dated to Phase III/IV (see discussion of chronology below). None of these individuals was aged over 35 years, although two remain unaged.

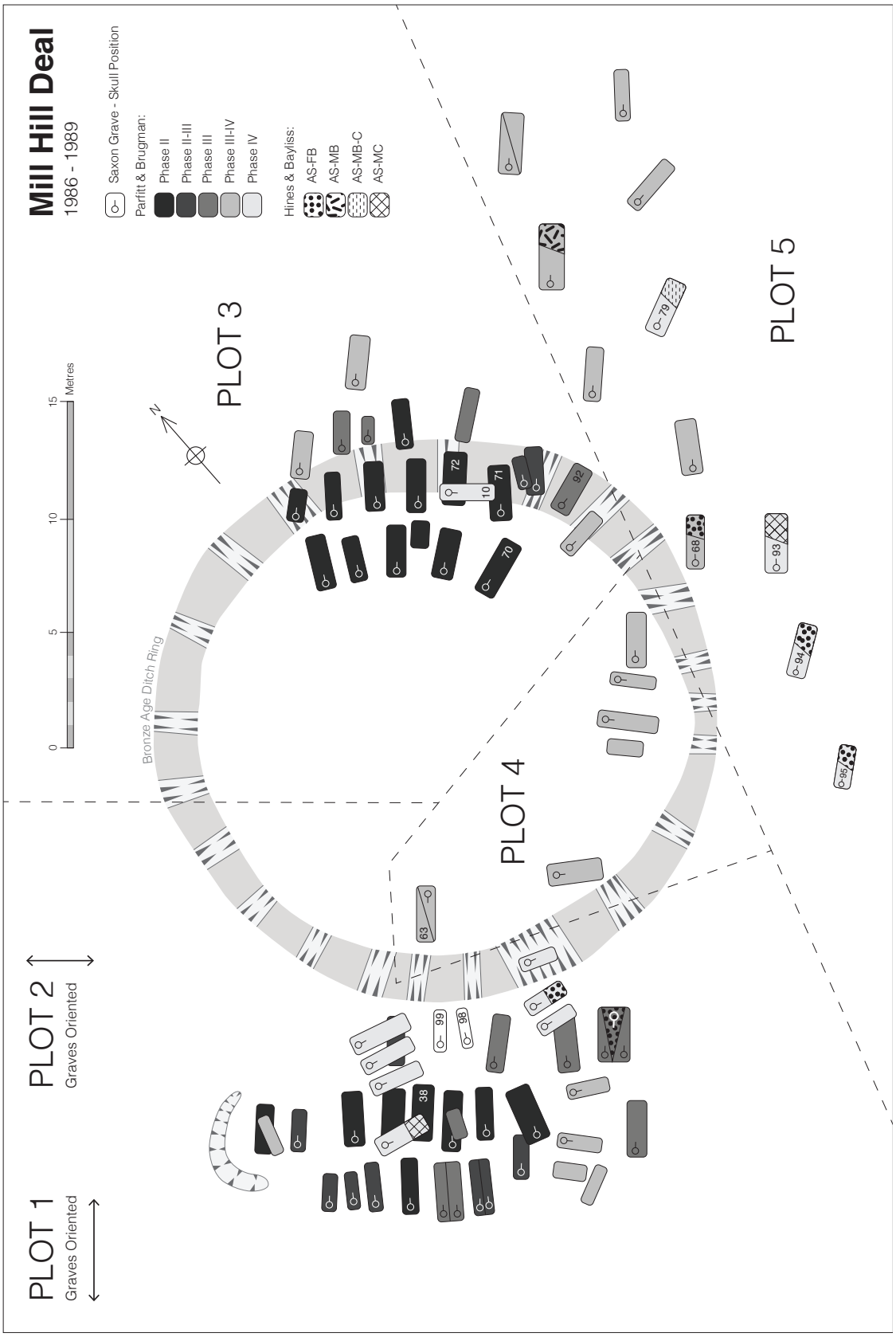

Figure 7-1 Map of Mill Hill cemetery showing spatial patterning and dates by Parfitt and Brugmann (1997) and Hines and Bayliss (2013). Geraldine Cave; after Parfitt and Brugmann 1997.

Plot 5 is a double row of graves along the eastern side of the barrow ditch, oriented largely south-west/north-east. The graves are well-spaced, suggesting that they may have been covered with barrows, a thesis supported by the observation that eight of the eleven burials in this plot are masculine weaponed burials. Each of these eight was buried with a spear, and three have the full weapon set of a spear, shield and sword; one has a seax with his spear, but no shield. These putative burial mounds appear to reference and reflect the earlier monuments on the site (Carver 2010: 11). There are three burials which do not fit this masculine pattern, all at the southern end of the plot; Burial 68 is closest to the ring ditch, a young material-culturally feminine burial which could perhaps be included in Plot four; Burials 94 and 95 are both older feminine burials.

Chronological Patterning

In addition to spatial information, the colour coding in Figure 7.1 highlights the chronology and phase ordering of the burials within the cemetery. The phasing of the nine graves examined by Hines and Bayliss (2013) is also shown (the stippled, striped and cross-hatched); as they were unable to reconcile gendered graves into one general phase, their study identified separate phasing for feminine and masculine graves. Their categories are labelled AS (for Anglo-Saxon) F (for female/feminine) or M (male or masculine) with phases ranging from B (earliest) to C (latest), including liminal categories like B-C which come between B and C (Hines and Bayliss 2013: 460-1). All the Mill Hill female/feminine graves they examined were in their AS-FB phase, which is the earliest of their phases, but the latest in the Mill Hill cemetery chronology. The Mill Hill male/masculine graves fell into three phases, AS-MB, AS-MB-C and AS-MC, which, like the feminine phasing, were early phases in their chronology, but the latest phases in Mill Hill cemetery chronology. Although not all the latest phase graves are in Plot 5, all Plot 5 graves come from the latest phases of the cemetery. Final phase graves in Plots 2 and 3 intersected with and disturbed earlier graves, indicating that the earlier graves were no longer visible when these graves were dug.

Using the dating of Parfitt and Brugmann (1997) (blues, beige, yellow and orange), it can be seen that Plot 5 graves all fall within Kentish Phase III/IV or Kentish Phase IV. Although Burial 79 (Phase IV) is close to the middle of the Plot, the rest of the Phase IV graves are at the southern end, with earlier graves to the north. The phasing of Hines and Bayliss (2013) shows the three male/masculine graves they examined in plot 5 are ordered from earliest to latest from north to south. Consequently, it is likely that the southernmost graves in plot 5, Burials 94 and 95, were the last to be dug; this is supported by the differences (see below) between Burials 94 and 95 and the rest of the burials in this plot. As this is the latest phase in the cemetery, Burials 94 and 95 were possibly the last two individuals ever to be buried in the Mill Hill cemetery.

This spatial and chronological patterning is also consistent with the age estimation data. Parfitt and Brugmann (1997: 108-9) used the high proportion, 50%, of 'mature' individuals (although not defined by them, it appears to be 40+ years) in Phase IV to conclude that the cemetery was abandoned in the late sixth century. To better explore older age and mortuary patterns, we re-estimated age-at-death in the Mill Hill sample using the method outlined in Cave and Oxenham (2016). Table 7.1 summarises the revised age-at-death profile where 12% of the sample has now been identified as being aged between 55 and 75+ years. Given the importance of Kentish Phase IV burials in our discussion, Table 7.2 provides age estimate revisions for each burial aged 25 years or more at death. It is also worth noting that the average age at death of all those buried in Kentish Phase IV is considerably higher than those from all other phases (Figure 7.2). The cemetery abandonment hypothesis, noted above, is also supported by the existence of a second burial ground, unexcavated, situated within 500m of this one; a brooch and a glass vessel found there have given that burial ground a probable later date than the current cemetery (Parfitt and Brugmann 1997: 109).

We consider it likely that there was a considerable gap in time between the earlier phase burials, Plots 1-4, and the feminine burials at the south of Plot 5. The later burials in Plots 1-4 have disturbed previous graves, whose location had apparently

been lost to living memory. The putative Plot 5 barrows would have been easily visible, and, perhaps knowing previous mistakes, the burying party took the ‘safe’ option in placing Burial 94 next in line after Burial 93; when the woman in grave 95 died sometime later, she was placed in the next available space along that line of burials.

Table 7-1Mill Hill Age-at-Death Profile: Original and Revised

Age category (in years)	0-2	3-17	18-29	30-44	45-54	55-64	65-74	75+	Unaged	Total
this study[1]	1 (1.2)[2]	27 (33.3)	13 (16.0)	14 (17.3)	10 (12.3)	6 (7.4)	3 (3.7)	1 (1.2)	6 (7.4)	81
Anderson & Andrews	1 (1.2)	27 (33.3)	19 (23.5)	17 (21.0)	10 (12.3)	1 (1.2)			6 (7.4)	81

[1] After Cave and Oxenham (2016)

[2] number (% in brackets)

Table 7-2 Kentish Phase IV Burials: adult age re-estimates

Burial Number	Age-at-Death estimates (in years)		Burial plot
	Parfitt & Brugmann age	this study	
10	45-55	55-64	3
40	30-40	45-54	2
45	40-45	45-54	2
64	18-20	-	2
77	7-9	-	2
79	25-35	35-44	5
93	40-50	55-64	5
94	40-50	65-74	5
95	45-55	75+	5
96	6-8	-	2
100	45-55	55-64	2
101	'grown'	45-54	2

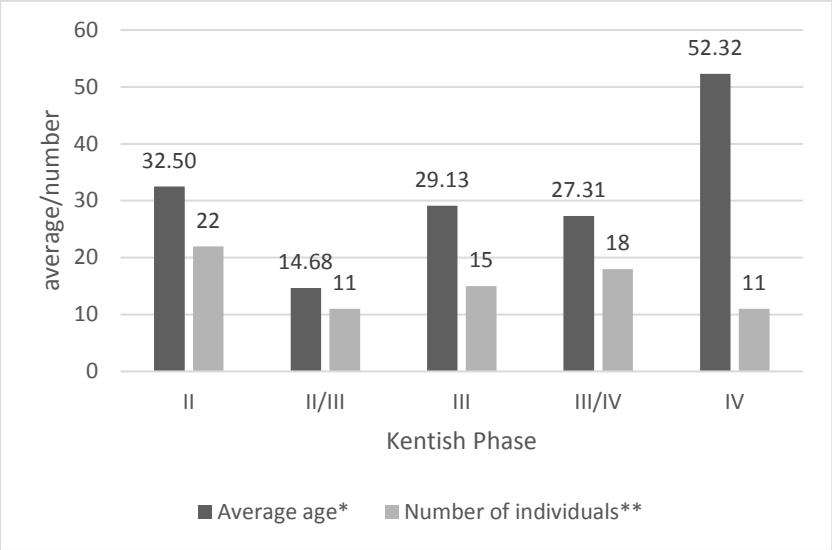

Figure 7-2 Average age-at-death (in years) at Mill Hill by chronological phase

*Average age is calculated by averaging the given age range; i.e. 65-75 years has an average of 70 years. NB. There are no individuals with an open ended age category. Ages are those calculated by Cave and Oxenham (2016) where available, otherwise the original ageing of Anderson and Andrews (1997) is used.

** Total number of individuals in each phase; unaged individuals are not included.

The Burials: 94 & 95

The two oldest individuals, as determined in our re-aging, are burials 94 and 95. As suggested by the chronology and spatial patterning of the cemetery, these also appear to be the very last individuals to be interred in the Mill Hill cemetery. Burial 94 was sexed as 'Female?' by Anderson and Andrews (1997: 194): 194) and aged 40-50 years. Beavan and Mays (2010: 104) estimated the age-at-death of this individual as 50+ years and sex as male. The skeletal material was in poor condition — only 20-40% complete (Beavan and Mays 2010: 104) and with no pelvic elements available, this sex determination was based on the presence of male cranial features (Simon Mays: pers. comm.).

Burial 94 (Figure 7.3) was buried with feminine grave goods: one debased silver Kentish disc brooch, decorated with garnets, zig-zag niello, type 6.1-2 animal decoration with a punched rim, as well as fused fragments of keys, a knife, a necklace of 54 beads and various unidentified metal fragments. The individual lay in

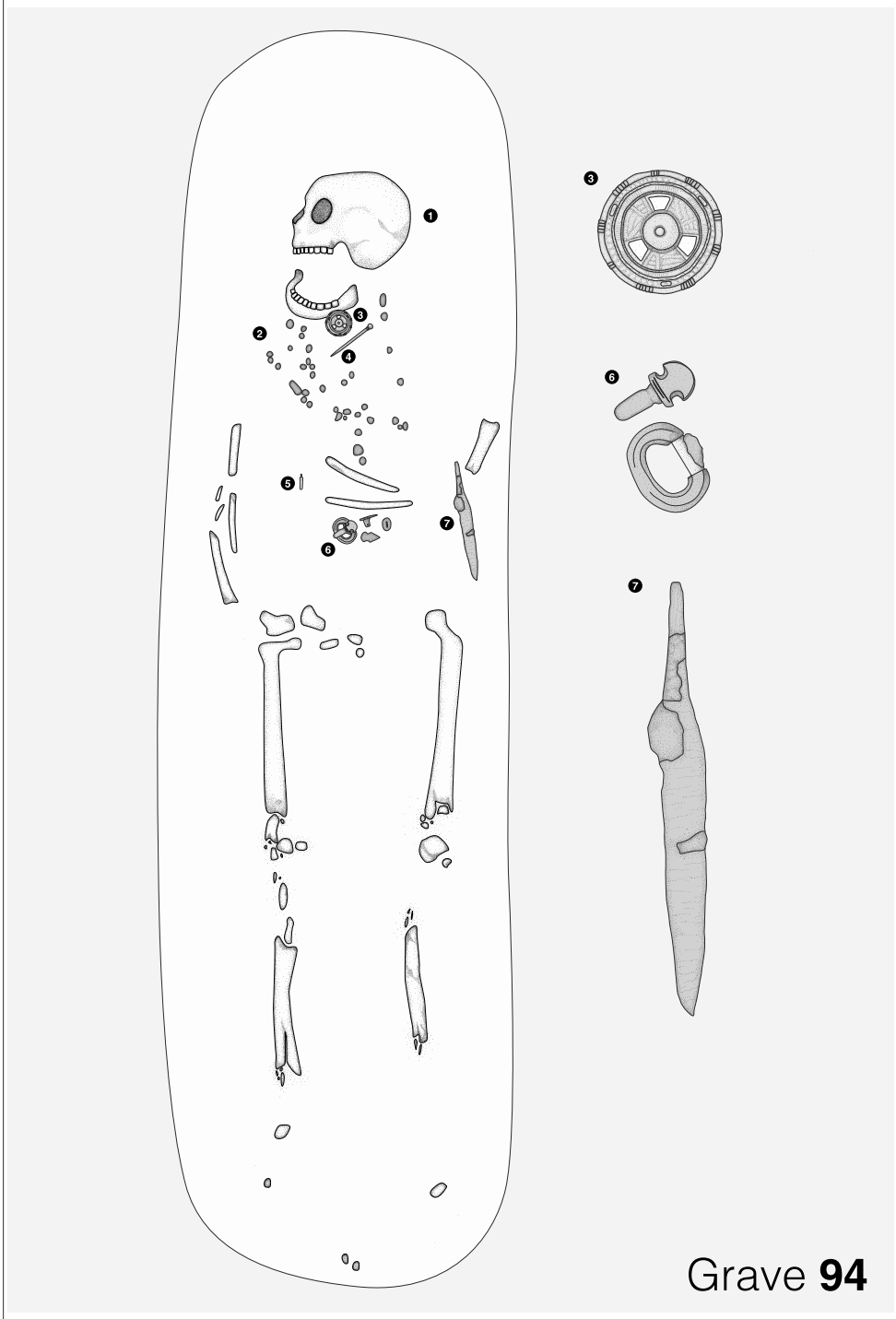

Figure 7-3 Grave 94 and associated goods. 1. Grave 94, 2. cluster of fifty-four beads, 3. debased silver Kentish brooch, 4. copper alloy pin, 5. fragment of bone, 6. copper alloy shield-on-tongue buckle with shoe shaped rivets, 7. iron knife. Prepared by Geraldine Cave)

an extended supine pose with head facing the right and their left forearm across the body, wearing their jewellery and with the knife carried at the waist (Parfitt and Brugmann 1997: 154; Figure 73). Burial 94 suffered some ante-mortem tooth loss and an abscess, but exhibited neither dental enamel hypoplasia nor cribra orbitalia (Beavan and Mays 2010: 104; Anderson and Andrews 1997: 233). Following our re-estimation of age-at-death (Table 7.2), Burial 94 was determined to be the second oldest individual in the cemetery (65-74 years old). The grave, at a depth of 0.74m, was relatively deep, being more than one standard deviation deeper than the average Mill Hill grave (0.53m). Mattock marks were visible on the base of the grave cut. Finally, an examination of a photograph of the body *in situ* reveals further details from a field anthropology perspective (Duday 2006; Willis and Tayles 2009). Poor preservation meant that the labial joints could not be assessed, however, it was clear that the left femur was laterally rotated somewhat out of the acetabulum, otherwise there was a linear alignment of the left side of body. It is possible that further lateral rotation of the femur was restricted by the grave cut or some other long since decomposed structure. Although not well preserved, it is apparent that considerable movement or disturbance has occurred in the thoracic region. The mandible had fallen open and the skull was crushed. From these observations, it is likely the body was interred in a void, perhaps a coffin (Anna Willis pers. comm.)

Burial 95 (Figure 7.4) was assessed as female by both Anderson and Andrews (1997: 155) and Beavan and Mays (2010: 104) with an age-at-death estimate of 45-55 years and 50+ years respectively. Her grave goods consisted of a small broken copper alloy quoit or annular brooch with worn punched decoration, a necklace of 22 beads, a key, a knife, an iron ring and ring fragment, as well as a fragment of the foot of a Roman dark blue glass vessel. Like Burial 94, she lay in an extended supine position; both arms were by her side and while she wore her necklace around her neck, all other goods, including the brooch, were found at her left hip, possibly encased within a since decomposed bag. She displayed evidence of vertebral

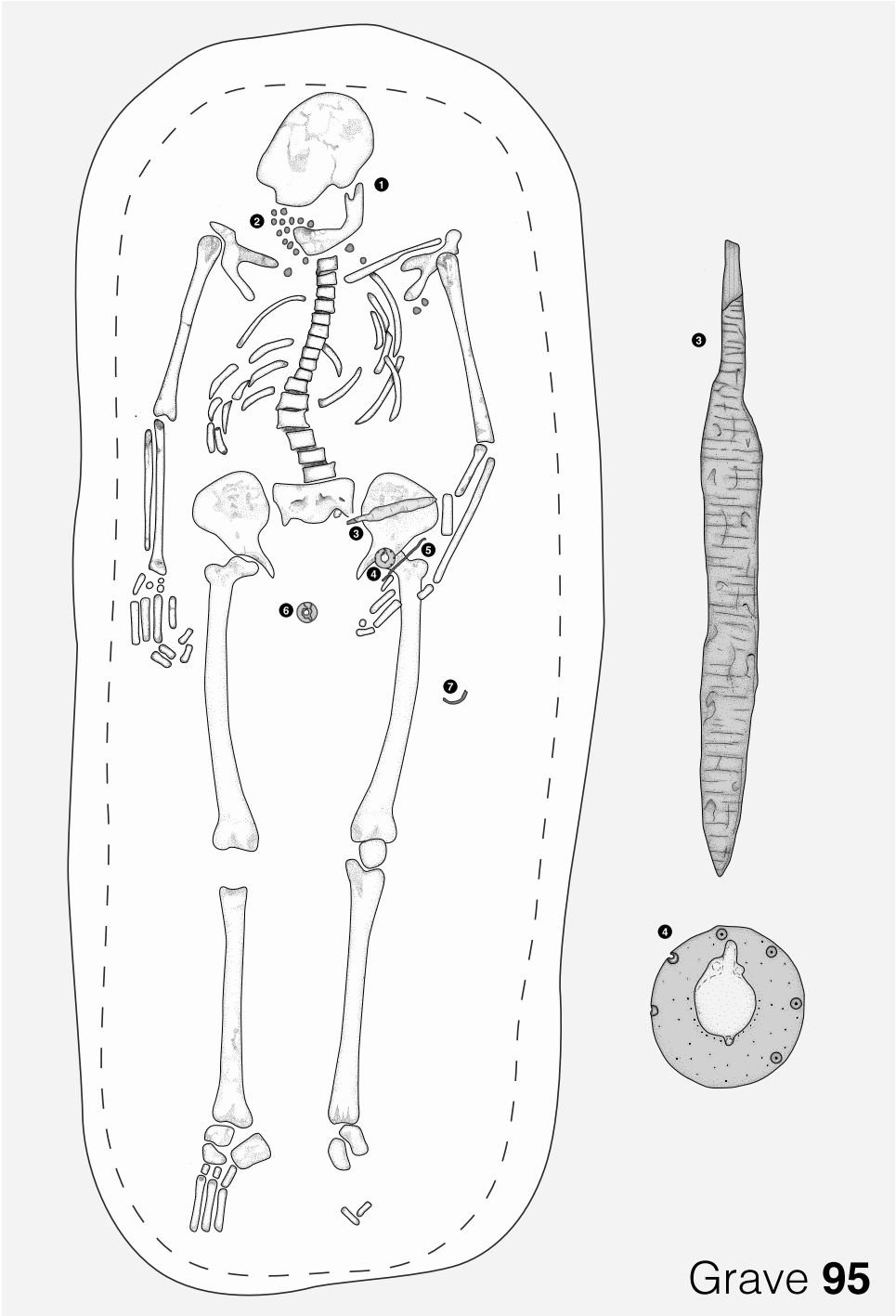

Figure 7-4 Grave 95 and associated goods. 1. Grave 95, 2. cluster of 22 beads, 3. iron knife, 4. copper alloy quoit or annular brooch, 5. fragment of hook shaped key, 6. foot of Roman glass vessel, translucent dark blue, 7. fragment of iron ring (prepared by Geraldine Cave)

osteophytosis as well as Schmorl's Nodes (Anderson and Andrews 1997: 227); Beavan and Mays (2010: 104) noted that there was no evidence of cribra orbitalia. At only 0.29 m deep, this burial comprised one of the shallower graves in the cemetery, being more than one standard deviation below average. Observations derived from an *in situ* photograph of the burial provide further information. As with Burial 94, the labile joints are not well represented except for the right hand, which has disarticulated, and the right foot. There is a linear alignment of the lower limbs, especially on the left, but also on the right to a degree, and the right foot is plantar-flexed in an unnatural position against either a long since decomposed wrapping, other structure/object or the edge of the grave cut. The pelvis is articulated, but there is some slight disarticulation at the sacroiliac joint. Curvature of the vertebral column is evident and the ribs have expanded laterally, suggesting they were not constricted. Something has disturbed the left forearm enough to turn the distal fragment of the radius around (assuming this did not occur during excavation). No constriction is visible at the level of the shoulders, but there is evidence of curvature that indicates the bottom of the grave was not flat. The right arm appears to be higher, and the skull is also propped up higher than the rest of the body, both supporting the interpretation of a curved grave base. The general movement of the smaller labile elements, although not well preserved, could indicate the individual was interred in a void, perhaps a coffin (Anna Willis pers. comm.). Although there is little movement of the larger elements, this is largely a product of the container or walls of the grave.

The only cranial material from Burial 95 available for the authors to examine was the mandible, and this showed extensive ante-mortem tooth loss. Noting the findings of Mays (1998: 62) that individuals older that 50-60 years have generally lost at least half their teeth, Burial 95 was placed at the furthest end of the seriation. Burial 95 was the southernmost burial in Plot 5 and it appears likely she was buried after Burial 94, and probably after the cemetery had largely gone out of general use. Burial 95 was most likely of the same or a similar cohort to Burial 94, but as she was buried later, the age re-estimation (Table 7.2) indicates Burial 95 was slightly older than Burial 94 at 75+ years old.

These two graves display multiple liminalities: they are liminal in time, as they may have been the last buried in the cemetery; they are liminal in space, as they were granted slots on the edge of the cemetery. Additionally, they display liminality in their great age, their gendering and in their probable religious and/or spiritual beliefs.

Multiple Liminalities

Liminality and Age

Burials 94 and 95 lived the final years of their lives at an age where they, as the longest living members of their community, were closest to the ultimate transition: death. Here we examine how their advanced age may have affected the manner of their burial as well as perhaps the final years of their lives. They were both buried with arguably standard Anglo-Saxon feminine grave goods. At Mill Hill, females and/or feminine gendered individuals were interred with up to six brooches, but by the time this pair was buried, feminine burial fashion had become less ostentatious with only a single brooch worn at the neck being usual (Parfitt and Brugmann 1997: 108 and 116). These two elderly individuals were probably born during the first phase of the establishment of this cemetery, in the early decades of the sixth century. However, we cannot say whether they began their lives in the community in which they died, or moved to it as children or upon marriage. Notwithstanding, they likely grew to adulthood at a time when Kentish women, including women they must have known and associated with, wore many brooches. It is likely that they too, at one time in their lives, had more brooches than those which accompanied them to their graves; begging the question, what happened to those brooches?

Martin (2012) suggests that brooches were the inalienable possessions of their owners and unable to be disposed of except through the burial display, but it seems that by the time this pair died, fashion or other societal changes may have altered such funerary prescriptions. Elderly people were most likely prepared for their graves by those younger than them, perhaps daughters or granddaughters. As such, did these family members make sure their relatives were buried in the appropriate fashion, even if they did not dress that way in life? Did the burial party take any excess brooches for their own use, discard or gift them? Or had these elderly individuals themselves disposed of them prior to death?

The brooch interred with Burial 95 was broken and unable to be worn, likely carried in a bag at her hip. It was a relatively plain brooch, with punched decoration and no precious

materials or inlay, in a cemetery with many highly decorated brooches. Only four individuals from the earlier phases of the cemetery (Kentish Phases II-III) were buried with only one brooch: two under 20 years (one female, one unsexed), one aged 35-44 years (female) and one unaged and unsexed. Considering the age at death of these single-brooched individuals and the period in which they were buried, they all (including Burials 94 and 95, but possibly excluding the unaged Burial 63) were probably contemporaneous. The grave goods of Burial 95 do not compare particularly favourably with other individuals with brooches of debased silver and/or garnets, apart from Burial 63 whose undecorated copper alloy annular brooch was offset by a fine decorated copper alloy buckle and belt plate (Parfitt and Brugmann 1997). Was Burial 95 a relatively poor member of the community and/or of a lesser status? Were any usable or higher quality brooches shared among her descendants, with only this one unwanted or deemed appropriate as a burial good?

Burial 94's brooch was of relatively higher quality to that of Burial 95: like many Mill Hill brooches, it was crafted of debased silver, extensively inlaid with garnets and other materials, with a punched decoration. Was it also unfashionable or the least desirable of the original suite of brooches of Burial 94? Conversely, was it the richest and most beautiful, and considered the most appropriate for the grave or the afterlife? Minimally, this individual appears to have been wealthier than Burial 95, and perhaps of higher status.

Although we can provide no definitive answers to questions about the lives and status of these two individuals, age liminality is likely an important factor. Although these burials demonstrate marginality, in their brooches, their age and their burial plot location, they also demonstrate their ultimate inclusion, with both individuals being buried normatively.

Other aspects of age and liminality are also apparent. The elderly is the cohort most likely to be buried with grooming items, especially tweezers (Cave and Oxenham under review, see Chapter 5), but neither of these individuals took such items to their graves. While high status Anglo-Saxon male or masculine burials signal martial rank, female or

feminine graves exhibit aspects of beauty (Cave and Oxenham under review). Burial 94, although interred with a highly decorative brooch, was unlikely to have been beautiful: either because they were male (cranially sexed as male-see above), masculine in appearance or due to their advanced age (it is worth noting that females can develop male-like cranial features with increasing age (Walker 1995: 36)). Burial 95, on the other hand, retained her gracile cranial features until the grave. Yet neither individual was interred with an item used for creating or maintaining their looks. Although fewer brooches had become common, these two individuals were likely to have owned more than one brooch in their youth; was their burial with a single brooch also because elderly females have moved beyond conventional beauty into a liminal space reserved for those whose looks cannot be redeemed?

The very old in Anglo-Saxon England were also the cohort found to be least likely to be awarded a non-normative burial (Cave and Oxenham forthcoming). Although these graves each have features which differentiate them in small ways from most of their community, neither could be considered non-normative. In terms of grave construction, one is relatively deep, while the other is relatively shallow. Further, field anthropological observations on the *in situ* photographs of the burials suggest they were both coffined. While we were not able to carry out field anthropological assessments of all burials, archaeological evidence for coffining has been noted for Burial 38 (female adult), Burial 70 (unsexed adult) and Burial 92 (elderly female of high status) (Parfitt and Brugmann 1997). Recent work at Ryburgh, Norfolk, suggests that coffining of Anglo-Saxon graves was not uncommon and that coffins could consist of hollowed out tree trunks (Hilts 2016), which is consistent with field anthropological observations of Burial 95 (possible curved base of grave/burial structure).

Turning to grave goods, these elderly individuals have fewer than usual number of brooches found in Mill Hill burials (up to six brooches, average of 2.8), but follow the norm; they also display beauty (or femininity at least) via brooches, but their advanced age (and in Burial 95 masculine features) suggest that they lacked conventional beauty. A possible difference in status between these two individuals has been suggested; the older Burial 95 interred in a shallow grave with a relatively plain brooch in a bag and

wearing fewer beads than her neighbour, who had a fashionable Kentish disc brooch, highly decorated with precious substances, in a relatively deep grave with more goods, including keys and a shield on tongue brooch. Yet in death they are buried near each other, both similar and different, following a line of high status men. These aspects give the graves an ambiguous character: both fashionable and unfashionable, both beautiful and not beautiful, both kept and given away, both old and young, both more feminine and less feminine. These liminalities are likely related to their extended age spans, but can also speak to their gendered identities

Liminality and Gender

Although Burial 95 was sexed (twice) as female, carried a brooch and wore a necklace, her gendering is muted. She had 22 beads in her necklace, while the average for the site was 72, and the median, 47. This small necklace was the only feminine item visible in the burial display. Her one brooch was broken, unable to be worn, and found in a group with other items; her only other gender signalling grave good, a probable key, was also hidden in the bag. In addition, the brooch was a relatively unusual type, simply decorated, differentiating it from the showier Kentish and Continental types found at Mill Hill. Nonetheless, we should not ignore the foot of the Roman glass vessel – a translucent ring of dark blue glass of similar size and shape to the brooch. Was this item used to decorate the body in the same way as a brooch? Was it placed in the bag alongside the brooch because of this function? This woman was undoubtedly buried in a normative way, but the display was subdued, and most gendered items were hidden from view. Is this because her great age de-gendered her (Silver 2003)?

Burial 94 is a different case altogether. Although Anderson and Andrews (1997) skeletally sexed him/her as possibly female, Beavan and Mays (2010) sexed him/her as male. Although the biological sex of this individual remains a puzzle (see above regarding age effects on cranial sex estimation), gender, in this instance, is well defined: the burial assemblage can be considered undoubtedly feminine, due to a showy brooch, 54 beads and fragments of possibly four keys.

Did this individual go through life as an unquestioned female, only becoming skeletally masculinised as they reached elderly status? Or were they an intersex or androgyne individual? While it is unclear how rare or common, for that matter, intersexed individuals were during this period, their existence in a site like this is possible. Sex estimation using cranial morphology is relatively accurate (Walker 2008; Walrath et al. 2004), but there are no standards for determining intersex or androgyne individuals and there are further complicating sex estimation factors related to Burial 94 being elderly. Alternatively, was this just an unusually skeletally robust woman? Or were they a male who was accepted as a feminine member of the community? The burial — including a deep grave and a silver brooch — attests to acceptance of feminine identity, but gender liminality remains.

These two relatively plain burials, one of muted femininity, one of potentially feminised masculinity, stand in contrast to the wealth of the male/masculine burials from this latest phase. Elderly men are more generously treated in death than elderly women (see Cave and Oxenham 2017b, and Chapter 6)(see Cave and Oxenham under review-b) and this pair reflect this finding. Were their relatively modest graves representative of their liminalities? Or was their modesty a result of other factors? However, they do conform largely to the Anglo-Saxon and Mill Hill norms; their liminality sits inside the border, not out.

Liminality and Religion

As noted before, Burials 94 and 95 are the two oldest individuals in this cemetery, were buried during the last phase of the cemetery, and their positioning suggests that they may have been the last individuals buried here. These can all be considered liminal aspects of these burials, but together they point towards another, larger liminality shared by the two of them. The latest graves in this cemetery, including Burials 94 and 95, have been designated as ‘Final Phase’ or ‘Conversion period’ burials (Hines and Bayliss 2013; Parfitt and Brugmann 1997). This is the period where furnished burial begins to decline, the cremation burial ritual ends, where regional, ethnic identities or fashions become standardised across Anglo-Saxon England and where Christianity begins to become the dominant religion (Welch 2011: 266-277). Kent is the closest

landing point to the already Christian Continent, and at Mill Hill at least, this change appears to be occurring before the arrival of Augustine in AD 597 (Parfitt and Brugmann 1997: 109), an event often used to designate the beginning of Christian Anglo-Saxon England (e.g. Pluskowski 2011: 765).

Anglo-Saxon culture displays considerable regionality and temporal change occurs throughout Anglo-Saxon territory (Price 2010: xiv). Whether 'paganism' or even 'religion' are suitable terms that accurately describe the cosmological beliefs of all or part of the peoples covered by the Anglo-Saxon umbrella is difficult to say (Price 2010: xiv). Price (2010: xiv) notes that any examination of early English religion soon finds the need to examine 'almost every aspect of society and culture'. Definitions of 'Paganism', the 'dead ghost behind Christianity' (Carver 2010: 3), largely revolve around its not being Christian but little else. However, 'pagan' customs and beliefs persisted in England right through the first millennium, despite Christianity being well established, and despite efforts by the clergy to stamp them out (Price 2010: xi-xiv).

Conversion from one religious belief system to another, on a population level, is rarely straightforward, but it may provide a reason for a new, possibly Christian, cemetery some 500m from Mill Hill (Pluskowski 2011). Death is often a time of religious observance, whether followed stringently or ignored in life; it is a time of liminality, when a person moves from one state into a new one, where the living engage with mortality, the afterlife, the supernatural as well as the transformation of the body and the soul of the deceased (Williams 2010: 68). As differing religions or cosmologies can see this change in different ways, and these ways may emphasise and re-emphasise the ways in which they see the world, the funeral ritual may be a demonstration of the religious beliefs of the burying party and probably of the deceased as well. Followers of a religion (Christianity) which at its heart rejects other religions, through its belief in a single god, with access to eternal life in Heaven reserved for those who have been baptized and who have followed the rules set down by the Church, may wish to separate themselves from those who went before.

Archaeological evidence provides clues to the conversion and can demonstrate that while Christian ideas are often welcome alongside the pagan, Christian political dominance is resisted (Carver 2010: 15). The period under review here, the late 5th to early 6th centuries, is many years before the 'dark curtain of Christianity' closed around Europe, 'inhibiting original thought about the supernatural there for the next 1000 years' (Carver 2010: 16). The evidence provided by these two liminal burials suggests they were not beholden to the new faith (whether Christians were banished to a new cemetery, or pagans were banned from it is uncertain). This pair may have remained steadfast in their traditional pagan beliefs and their burial parties recognised and accepted this, despite the probability that they themselves had converted to Christianity.

Religious conversion on a personal level involves a reorganisation of personal identity and at the very least an acceptance of a new belief system as well as the actions and controls that go with this new or reconceptualised identity (Hefner 1993: 17). Whether the new converts took up this new moral authority because of a rational understanding of the new doctrine, the vigilance of priests and their insistence on a new and sanctified dogma, or punishment of those who refused we cannot perceive through the archaeology of a pagan cemetery. However, it does appear that a certain degree of acceptance was granted to those who stayed with their old faith, in that they were buried among their kind.

It seems possible, or even likely, that those individuals in the community who had converted to Christianity were buried in the new cemetery and those who stayed with the religion they had known all their lives were buried in the old cemetery. It also makes sense that it was the older members of the community who refused to 'move with the times' and convert to Christianity and so continued to be buried in the old cemetery. These oldest individuals appear to have been last of their kind.

Conclusions

This chapter has examined the burials of two individuals from the Early Anglo-Saxon cemetery on Mill Hill, Deal, Kent in the context of substantive social and cosmological

changes across space and time. These two individuals, the longest lived and probably the last to be buried in the cemetery, speak to multiple liminalities, which highlight not only aspects of their own lives and deaths, but also aspects of the community that buried their dead on this hill.

As the oldest in their community, these two spent many years visibly close to the ultimate transition. Their great age would have been etched on their bodies and perhaps their minds, and would have affected their relationships with other members of their community and, ultimately, those who buried them. Although they were buried on the edge of the cemetery, they were included among a high status burial group consisting mostly of weaponed males. Although Anglo-Saxon feminine burials usually celebrate beauty, or at least highlight it, these two were unlikely to be beautiful, and were buried without the tools used for maintaining and enhancing that beauty. Although they were feminine burials, with beads, brooches and other feminine items, their femininity was muted; this is especially the case with Burial 95 whose feminine identity was simple and almost austere, largely concealed in a bag; while the remains of Burial 94 suggest that this individual may not have been biologically female, despite the silvered and garneted jewellery. Finally, these two burials, possibly the last in this burial ground, appear to symbolise the transition from paganism to Christianity. This is supported by the presence of another (probably Christian) cemetery within 500 metres of this one; although it has not been excavated, goods found suggest a slightly later date than Mill Hill (Parfitt and Brugmann 1997). These two individuals, of a great age and of differing wealth and status, may have been the last pagans on Mill Hill.

ACKNOWLEDGEMENTS

Thanks are due to the following individuals and organisations. Staff of the Dover Museum, Dover, Kent, provided access to the skeletal material and the space in which to examine it. Geoff Halliwell, of the Dover Archaeological Group, was an excellent lab assistant during the data collection; Keith Parfitt, also of the Dover Archaeological Group, and who led the excavation of the Mill Hill site, provided photographs (Credit: Dover Archaeological Group) of Burials 94 and 95. Anna Willis (James Cook University) provided the field anthropology interpretations of Burials 94 and 95. Simon Mays (Heritage England) gave us his cranial sex estimation findings for Burial 94. Geraldine Cave redrew the site map as

well as making drawings of the two featured burials with selected artefacts. This research is supported by an Australian Government Research Training Program (RTP) Scholarship.

Chapter 8 Concluding remarks

Do not go gentle into that good night,
Old age should burn and rave at close of day;
Rage, rage against the dying of the light.

(DYLAN THOMAS 1952)

This thesis has sought to investigate, uncover and understand the implications of living to an old age in Early Anglo-Saxon England through analysis of the mortuary record evidenced by three representative Early Anglo-Saxon cemeteries. These cemeteries, Great Chesterford Essex, Mill Hill Deal Kent and Worthy Park Kingsworthy Hampshire constitute a diverse area of Anglo-Saxon England and display not only the similarities embedded in the cultural record, but also the differences.

Before the condition of the elderly could be established, the general culture and social conditions of Early Anglo-Saxon life, especially the mortuary record, needed to be identified. The cemetery of Great Chesterford was used in this thesis to illustrate Anglo-Saxon life and death through the lens of children and infants. The paper *Out of the Cradle and Into the Grave: the children of Anglo-Saxon Great Chesterford, Essex*, published in 2017 in Eileen Murphy and Melie Le Roy's book *Children, Death and Burial: archaeological discourses*, created an archaeological baseline from which to make inferences about another neglected cohort.

With the baseline established, this thesis moved from the very young individuals to those who had survived the longest. Old age is a much under-theorised aspect of the lives of ancient individuals, not in the least because of the difficulty of identifying these invisible people. The difficulty of identification, due in part to the wide variability of age related changes found in aged people themselves, meant that the next step in achieving the thesis aims was to establish a method of identifying these

elderly individuals. To overcome this difficulty, *Identification of the Invisible Elderly: an approach with an Anglo-Saxon Example* was published in the *International Journal of Osteoarchaeology* in 2016.

This was the first step in examining the implications of living to a grand old age in Early Anglo-Saxon England. The next paper in the series, *Insights into the Experiences of the Elderly in Early Anglo-Saxon England*, currently under review, examines these implications for the people buried in the three cemeteries. This involved examining the graves and grave goods of the newly-identified elderly and comparing them to other cohorts – the middle-aged, young adults, and non-adults, using both qualitative and quantitative methods. This paper concluded that in general, old age did not have a detrimental effect on an individual's community standing, although some individuals did fare badly, and others appeared to increase their status as they aged. Perhaps surprisingly, the particular grave inclusion that can most be associated with the very old is the grooming item, especially tweezers. This may relate to the visibility of age related changes on the body, and perhaps the necessity of ameliorating these apparently negative bodily changes in the afterlife. Although not explicitly explored in this paper, the results hinted that the likelihood of survival to elder status appeared to be a gendered process – more women than men lived long lives; this meant that the gendered effects of ageing were the next essential step in exploring the status of elderly Anglo-Saxons.

Sex and its close relative, gender, affect many aspects of life today, and the burial record suggests that this was also the case in the past. The fourth paper presented in this thesis, *Sex and the Elderly: Attitudes to long-lived women and men in Early Anglo-Saxon England,* published in 2017 in the *Journal of Anthropological Archaeology* established that sex did play a significant role in this period. Even simple survival was a gendered process, as this thesis found that life expectancy at birth was greater for women than for men, as it is in the world today, even in countries with low life expectancies. Not only do women tend to survive longer than men, they also suffer greater morbidity; as the cemetery reports detailing pathology and the human

skeletons varied greatly in their scope and data, no conclusions about greater morbidity could be found. Greater morbidity, however, may be the reason that women's status declined from early middle age onwards, while that of men increased as they aged.

To illustrate not only gendered ageing but the relationship of ageing to cosmology or religion, a case study of two elderly individuals from Mill Hill was included in this thesis. *Multiple Liminalities in Early Anglo-Saxon England: age, gender and religion* has been accepted for inclusion in a volume edited by Grete Lillehammer and Eileen Murphy to be published in 2018. The two oldest women buried on Mill Hill display multiple liminalities related to their age, aspects of their gendered burials and even their religious affiliation. They demonstrated that an individual's identity changes as they age, as does the identity of their potential burial party. This paper also facilitated a focused snap-shot of life in Early Anglo-Saxon England.

It is argued that this thesis has shone a light on a hitherto invisible cohort of Early Anglo-Saxon England. It has shown that while some elderly were indeed revered in death, and some were buried without care and perhaps even disdain, most elderly were treated similarly to other age cohorts. However, this, like Anglo-Saxon life itself, was a strongly gendered process and old women were treated with less respect than old men.

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APPENDIX 1: OUT OF THE CRADLE AND INTO THE GRAVE

Out of the Cradle and into the Grave: the children of Anglo-Saxon Great Chesterford, Essex, England: pp. 179-95 in Murphy, E.M. & Le Roy, M. (eds.), *Children, Death and Burial: Archaeological Discourses.* Oxford: Oxbow Books.

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CAVE CM and OXENHAM MF

Current Status

Published July 2017

AN OFFPRINT FROM

Children, Death and Burial

Archaeological Discourses

Paperback Edition: ISBN 978-1-78570-712-4
Digital Edition: ISBN 978-1-78570-713-1 (epub)

edited by
Eileen Murphy
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Published in the United Kingdom in 2017 by
OXBOW BOOKS
The Old Music Hall, 106–108 Cowley Road, Oxford OX4 1JE

and in the United States by
OXBOW BOOKS
1950 Lawrence Road, Havertown, PA 19083, USA

Paperback Edition: ISBN 978-1-78570-712-4
Digital Edition: ISBN 978-1-78570-713-1 (epub)

A CIP record for this book is available from the British Library and the Library of Congress

Printed in Malta by Gutenberg Press Ltd
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Front cover: Painting by Libby Mulqueeny, based on a photograph taken by Belinda Tibbetts of Sk.4406, a 6–12 month old infant, from Çatalhöyük (Fig. 3.3).

Contents

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Chapter 12

Out of the Cradle and into the Grave: The Children of Anglo-Saxon Great Chesterford, Essex, England

Christine Cave and Marc Oxenham[1]

Abstract: This paper seeks to shine a light on the lived experience of Anglo-Saxon children, especially the infants. Unlike most Anglo-Saxon sites, Great Chesterford appears to be the final resting place of the whole community, providing an opportunity to examine usually invisible children. As children are buried by adults, inferences can be made about their attitudes to the dead child, as well as community concepts of children and childhood. Where and how they are buried not only reflect adult points of view, but also provide a glimpse, albeit through the distorted lens of the grave, of the life of that child. We found that although some were buried with exceptional treatment, in general children were supplied with fewer, less expensive grave goods than adults; some were buried in ways that marked them as unusual. Nonetheless, most usual adult grave goods are represented in juvenile graves. While the funeral tableau provides an aid to remembering the dead, the burying of artefacts also functions as an aid to forgetfulness. Therefore, we conclude that the unwillingness or inability to commit scarce resources to a dead child's grave is not necessarily a sign that their deaths were without meaning or that the child was not missed.

Keywords: burial, infant, juvenile, childhood, mortuary, grave goods, Anglo-Saxon England

Introduction

I was once a child. You were once a child. All of the scholars cited in this paper were once children. Childhood, or socio-biological immaturity, is an experience shared by all adult humans, sometimes remembered sometimes forgotten, but always having shaped our lives. This stage of the life course may be conceptualised in different ways by different societies, but it is essentially that period where a child grows and learns how to be an adult, through socialisation, formal education or imitation.

The study of children is undoubtedly important in itself, but most aspects of childhood also involve adults, so understanding childhood is also essential to understanding the adult world (Orme 2009, 110). Every culture creates and defines the nature of childhood (Baxter 2006, 79), but adults are not the only influence on children; there exists a self-maintaining children's culture out of reach to outsiders (Sánchez Romero 2008, 20). Although subject to their parents' desires and agency, children also have their own agency; while they embrace cultural customs, they also struggle against them (Crawford and Lewis 2008, 11). Thus, children learn formally and informally from adults and peers, interpreting messages, ultimately transmitting refashioned culture to the next generation (Scott 1997; Baxter 2005).

While children are buried by adults, inferences can also be made about the life of the child; where they are buried and how they are buried reflects attitudes of adults to children, which affect the life of the child. Grave goods, orientation, depth and positioning all provide clues to infer cultural norms – like the age a child is considered a full member of society, or the age a child is expected to become adult.

This paper seeks to shine a light on the lived experience of Anglo-Saxon children, especially those less than two years of age. We start by introducing Anglo-Saxon funerary practices, and the cemetery at Great Chesterford, Essex, which was in use AD 450–600. Then we will examine the burials of infants and children and compare them with others. We will also present an illustrative case study, before a short discussion and conclusion.

Anglo-Saxon Archaeology

Anglo-Saxons are visible in their distinctive gendered funerary ritual – women buried with brooches and jewellery, men with weapons (Lucy 2000). Consequently, Anglo-Saxon burial archaeology has often used grave goods to determine the sex (or more accurately gender) of skeletons (Lucy 1997; Stoodley 1999); some even favour the determination of sex by grave goods over biological sexing if the two should disagree (see, for example, Hirst 1985; Evison 1987). Great Chesterford contains 20 children 'sexed', or gendered, through grave goods, 17 female (or feminine) and three male (or masculine) (Evison 1994).

Few infants are found in Anglo-Saxon cemeteries in England (Crawford 1999, 170) – the cemetery at Berinsfield, Wallingford, contains only one infant among 118 graves, while the youngest burial at Mill Hill, Deal, Kent, was two years old at death (Parfitt and Brugmann 1997). Stoodley (1999) developed a dataset of 46 Anglo-Saxon cemeteries containing 1095 aged burials, but only 28 (2.6%) individuals were aged less than one year.

The Missing Children

This absence of infants is not unusual and the differential burial of infants has a long history in time and space (Lucy 1994; Scott 1999; Kamp 2001; Lewis 2007; Murphy 2011).

This may be because a child requires particular treatment due to cultural reasons, or that they have not yet achieved personhood. Many cultures fear dead children – they may either become malevolent sprits or be too young to ward them off (Barretto-Tesoro 2008; Tsaliki 2008). Notwithstanding, quite contrary views have also been reported with dead, or even dying children, having been seen as transforming into angels (e.g. see Scheper-Hughes 1989).

Under-representation could also be the result of the fragility of infant bones, due not only to bone mineral density but also burial position (Manifold 2012); however, infants are found in larger numbers in comparable sites from Roman Britain and the Christian Anglo-Saxon period (Crawford 1993; 1999; 2007; Stoodley 1999; 2000). Infants may have been buried in shallow graves since disturbed by animals or the plough (Crawford 1999; 2000; Stoodley 1999; 2000) or, as Stoodley (1999) suggests, (although unlikely) child mortality may have been as low as the figures suggest. Alternatively, 'other methods may have been used to dispose of the quantity of dead infants that must have been cluttering up the Anglo-Saxon world' (Crawford 1993, 3). These 'other methods' may have been less visible archaeologically (Härke 1997; Crawford 2000; Stoodley 1999; 2000). Infant bones have been found in at least 11 Anglo-Saxon settlements, in pits, ditches, under floors, disregarded as rubbish and ignored in the site reports, perhaps missed by archaeologists focused on pot sherds or weaving tools (Hamerow 2006; Crawford 2008; Manifold 2011). Infants may also be interred as deliberate foundation or termination deposits associated with entrances and liminal spaces (Hamerow 2006).

One Anglo-Saxon cemetery provides an excellent opportunity to study the life of the Anglo-Saxon child. Great Chesterford, Essex, includes the graves of 88 subadults (including 63 infants less than two years of age), alongside the burials of 83 adults. Therefore, it appears to be the final resting place of the whole community; this study involves a re-examination of its mortuary archaeology.

Methods, Materials and Results

The Anglo-Saxon cemetery at Great Chesterford was excavated under rescue conditions during 1953–5, and 161 graves were discovered which included 171 inhumations, 33 cremations, two horse burials and two dog graves (Fig. 12.1). Evison (1994) dated the site through grave good typologies to AD 450–600. He concluded that it represents a community of normal Anglo-Saxon economic status, with only two swordsmen and a few rich women present, no gold and very little silver; the jewellery present is largely of bronze.

Analytical Procedure

Data from the cemetery were analysed using chi-squared statistics and independent t-tests with a 0.05 significance level. Three basic comparisons were made between subadults (0–15 years) and adults (16+ years); with subadults also assessed as the

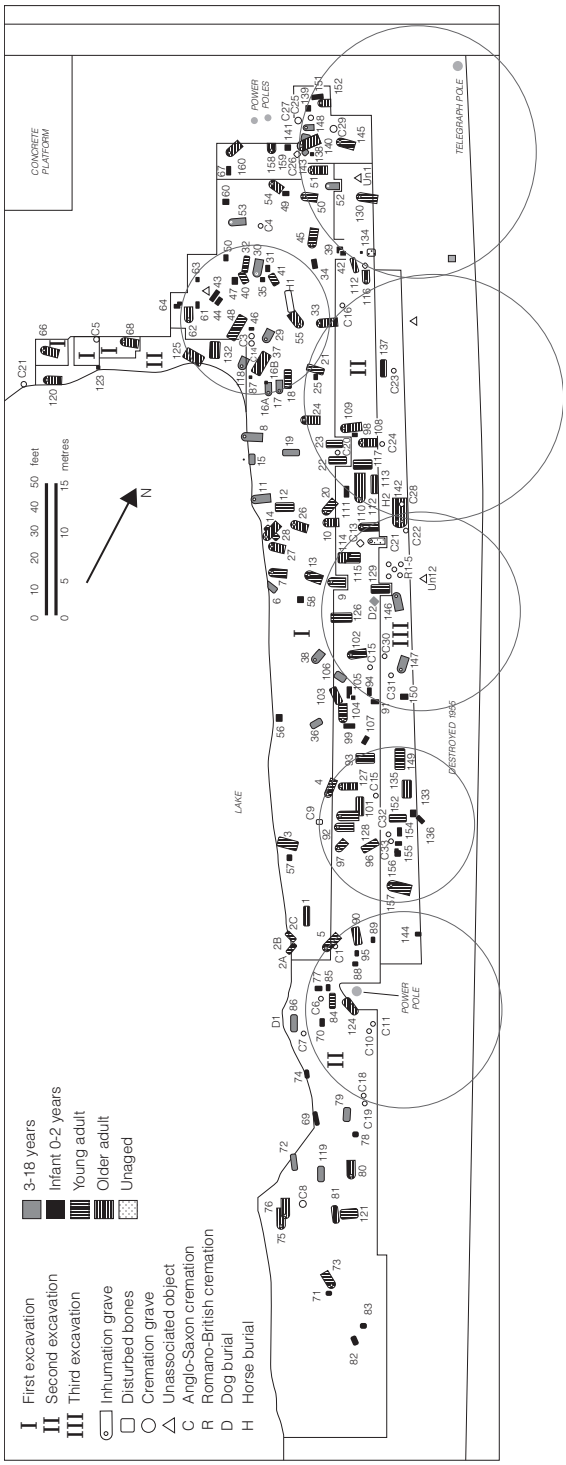

Figure 12.1. The Anglo-Saxon cemetery of Great Chesterford Essex: Age (after Evison 1994).

separate categories of infants (0–2 years) and children (3–15 years); with a further category of combined children and adults (3+ years) that excludes infants.

Demography

The excavated part of the Anglo-Saxon cemetery at Great Chesterford contained the remains of 173 individuals, including two perinates found within the pelvic region of their mothers (Table 12.1). An abridged life table of the burials (Table 12.2) shows that life expectancy at birth was 18.4 years, increasing to a maximum of 26.4 years in the 5–9.9-year age category.

Table 12.1. Great Chesterford Demography (ages in years) (data after Waldron 1994).

	Pre-term	*0–2 years*	*3–5 years*	*6–9 years*	*10–15 years*	*'Juvenile'*	*15–25 years*	*26–35 years*	*36–44 years*	*45+ years*	*Adult*	*Unaged*	*Total*
Female	–	–	–	–	–	–	9	10	18	6	1	1	44
Male	–	–	–	–	–	–	7	8	8	8	6	0	37
Unsexed	17	48	7	10	2	1	0	2	0	0	2	2	6
Total	17	48	7	10	2	1	16	20	26	14	9	3	173
Sex ratio							0.78	0.8	0.44	1.33			0.84

Total Subadults (0–15 years) 85; Total Adults (16+ years) 88

Table 12.2. Abridged Life Table for Great Chesterford (N=160) (data after Waldron 1994). Abbreviations – x: age category in years; nx: years in age category; Dx: number of deaths; dx: percentage of deaths; lx: number of survivors entering: indicates what percentage of a theoretical original population of 100 people remains alive at the end of each five-year period [calculated by subtracting dx during the preceding interval from lx in the same interval]; qx: probability of death: calculated by dividing the dx during an interval by the lx entering that interval; tx: total years lived between X and X+5: total number of years lived by all; individuals during each interval [formula: Lx=nx(lx+lo)/2; where lx is number of survivors entering interval x and lo is the number of survivors entering the following interval]; Tx: total years lived after lifetime: total number of years remaining in the lifetimes of all individuals entering each age interval [add values in Lx column for that interval and all succeeding intervals]; e^0x: life expectancy: average number of years an individual entering age interval x can expect to continue to live [$e^0x=Tx/lx$].

x	*nx*	*Dx*	*dx*	*lx*	*qx*	*tx*	*Tx*	e^ox
0–4.9	5	72	45	100	0.45	387.5	1837.5	18.4
5–9.9	5	10	6.3	55	0.114	259.4	1450	26.4
10–14.9	5	2	1.3	48.8	0.026	240.6	1190.6	24.4
15–24.9	10	16	10	47.5	0.211	425	950	20
25–35.9	10	20	12.5	37.5	0.333	312.5	525	14
35–44.9	10	26	16.3	25	0.65	168.8	212.5	8.5
45–59.9	10	14	8.8	8.8	1	43.8	43.8	5

To assess fertility, a series of commonly employed measures were calculated, although the source report employed non-standard age categories – the juvenile/adult ratio (normally 5–15 years: 20+ years had to be modified to 5–15 years:25+ years) is 12:60 or 0.20; the D20+:D5+ ratio modified and reported as a D25+:D5+ ratio, is 60:88 or 0.68; the $15P_5$ ratio (normally 5–19 years:5+ years, modified to 5–25 years:5+ years) is 28:88 or 0.32. The adult sex ratio of 44 females to 37 males is 0.842 (not statistically significant from a 1:1 binomial distribution, two tailed p=0.505), while the sex ratio for the potential female fertile period (15–35 years, 15 males, 19 females) is 0.79 (again, not statistically significant from a 1:1 binomial distribution, two tailed p=0.608) (Bellwood and Oxenham 2008; Domett and Oxenham 2011; Willis and Oxenham 2013).

Waldron (1994) osteologically determined the sex of the adult skeletons, but Evison (1994) also 'sexed' or gendered individuals through their grave goods: children with brooches or beads (n=17) deemed to be female, while those with weapons (n=3), were recorded as male. The ratio of feminine to masculine subadults, based on grave good determinations was found to be statistically significantly different to a hypothesised 1:1 distribution of male and female subadults (binomial test, two tailed, p=0.003).

Burial Practices

The mean burial depth for adults was 1.07 m, and for subadults (0–15 years) it was 0.89 m. An independent samples t-test found this difference to be significant (t=3.271, p=0.001). With the exception of the age category 3–5 years, where 3/7 (42.9%) of individuals were buried at depths of at least 1.3 m, burial depth increases with advancing age until adulthood is reached.

Subadults (0–15 years) were interred in multiple burials significantly more often than adults (16+ years) (Tables 12.3 and 12.4). Subadults were buried on their sides (either right or left sides) significantly more than adults, while infants were buried on their sides significantly more often than both children (3–15 years) and a combined sample of children and adults (3+ years).

Most individuals at Great Chesterford were interred south–north (head to the south) or west–east (head to the west); reverse orientations are those between 116°–251° from True North (Evison 1994, 38–9). Significance testing suggests that infants are significantly more likely to be buried in reverse orientation compared to the rest of the population, but differences between infants and children (3–15 years), subadults and adults were not significant (see Tables 12.3 and 12.4).

Some individuals were buried in a way that marked them as different. These include prone burials, those without surviving grave inclusions, those buried with amuletic artefacts and burials containing large rocks. The largest category of non-normative burial is that without surviving grave goods (26.3%; 45/173); there are multiple examples of non-normative orientation and graves containing large rocks, as well as a mass grave (#83) containing six pre-term babies (see Table 12.3) (Connor 2009). Testing suggests that the difference between subadults and adults, infants (0–2 years)

Table 12.3. Contingency table data for burial practices and grave good types by age category (data after Evison 1994).

Age category	*0–2 years*			*0–15 years*			*3–15 years*			*3+ years*			*16+ years*		
	With	*Without*	*%*	*With*	*Without*	*%*	*With*	*Without*	*%*	*With*	*Without*	*%*	*With*	*Without*	*%*
Multiple burial				13	70	15.9							2	83	2.35
Side burial	14	1	22.2	23	11	27.7	9	10	45	21	80	20	12	70	14.1
Reverse Orientation	7	29	11.1	8	48	9.6	1	18	5	6	97	5.7	5	79	5.9
Non-normative burials	43	20	68.3	49	34	59	6	14	30	27	78	25.7	21	64	24.7
Any grave goods	28	35	44.4	44	39	53	16	4	80	91	14	86.7	75	10	88.2
Gendered goods	13	12	20.6	21	21	25.3	7	9	35	61	31	58.1	53	22	62.4
Weapons and jewellery	7	56	11.1	12	71	14.5	5	15	25	56	49	53.3	51	34	60
Jewellery	6	57	9.5	9	74	10.8	3	17	15	37	68	35.2	34	51	40
Beads	11	52	17.5	16	67	19.3	4	16	20	31	74	29.5	26	59	30.6
Polychrome glass beads	3	60	4.76	4	79	4.8	1	19	5	22	83	21	19	66	22.4
Amber beads	4	59	6.4	6	77	7.2	2	18	10	20	85	19.1	18	67	21.2
Multiple bead types	5	58	7.9	7	76	8.4	2	18	10	23	82	21.9	21	64	24.7
Containers	7	56	11.1	11	72	13.3	4	16	20	22	83	21	18	67	21.2
Total in age category		63			83			20			105			85	

Table 12.4. Results of significance testing of burial practices and grave good types by age category. χ2 Pearson's uncorrected. Definitions – subadult <15 years; adult >15 years; infant <2 years; non-infant >2 years; child 2–15 years. Comparisons: first value (e.g. subadult) greater than second (e.g. adult). Values in bold signify statistically significant differences – p<0.05.

	Comparison	*χ2*	*p*
Multiple burial	subadult>adult	7.585	**0.006**
	subadult>adult	32.060	**0.000**
Burial on side	infant>non-infant	29.268*	**0.000**
	infant>child	6.125*	**0.013**
	subadult>adult	2.770	0.096
Reverse orientation	infant>non-infant	5.836	**0.016**
	infant>child	0.533*	0.465
	subadult>adult	20.363	**0.000**
Non-normative burial	infant>non-infant	29.316	**0.000**
	infant>child	9.186*	**0.002**
	adult>subadult	25.219	**0.000**
Grave goods present	non-infant>infant	33.976	**0.000**
	child>infant	6.343	**0.012**
	adult>subadult	4.947	**0.026**
Gendered goods	non-infant>infant	1.730	0.188
	child>infant	0.266	0.606
	adult>subadult	37.162	**0.000**
Weapons or jewellery	non-infant>infant	29.268	**0.000**
	child>infant	6.128	**0.013**
	adult>subadult	18.746	**0.000**
Jewellery	non-infant>infant	13.671	**0.000**
	child>infant	0.008	0.784
	adult>subadult	2.865	0.090
Beads	non-infant>infant	3.056	0.080
	child>infant	0.000	1.000
	adult>subadult	9.492*	**0.002**
Polychrome glass beads	non-infant>infant	6.921*	**0.009**
	child>infant	0.000*	1.000
	adult>subadult	6.672	**0.010**
Amber beads	non-infant>infant	4.200*	**0.040**

(Continued)

Table 12.4 (Continued)

	Comparison	*χ2*	*p*
	child>infant	0.003*	0.957
	adult>subadult	8.006	**0.005**
Multiple bead types	non-infant>infant	5.531	**0.019**
	child>infant	0.000*	1.000
	adult>subadult	1.846	0.174
Containers	non-infant>infant	2.670	0.102
	child>infant	0.416*	0.520

**Yates corrected χ2 used when any value <5*

and all aged 3+ years (combined children and adults), and infants and children (3–15 years) in receiving a non-normative burial is statistically significant (see Table 12.4) with the chance of receiving a non-normative burial decreasing with increasing age.

Grave Goods

Only 11.8% of adults were buried without any surviving grave inclusions, while 45.9% subadults had no goods (see Table 12.3). The differences between subadults and adults, between infants and all others (3+ years) and between infants and children (3–15 years) in relation to the presence of grave goods are significant (see Table 12.4).

The average number of beads in a necklace (21.07 overall) was also examined and found to peak in the 10–15 years age group. An independent samples t-test compared the mean number of beads worn by subadults compared to those worn by adults (t=3.130, p=0.004), as well as differences between infants and the rest of the population (3+ years) (t=3.500, p=0.002), and infants and children (t=2.157, p=0.049), finding significant differences between these categories.

To determine if any particular grave good was more likely to be placed with a child, χ^2 values were calculated for burials with or without weapons, jewellery, containers and beads. The popularity of polychrome glass beads and amber beads was also tested, as well as the likelihood of receiving more than one type of bead (see Tables 12.3 and 12.4). The results show that both subadults (0–15 years) and infants are treated significantly differently to older individuals in the placement of weapons, jewellery, polychrome glass beads, amber beads and of more than one type of bead. They are not treated significantly differently in the placement of containers or monochrome beads. Infants were treated significantly differently to children (3–15 years) in the placement of weapons and jewellery only.

Among those who received goods, the placement of apparent gender-indicating items (brooches, pins, girdle hangers, beads and weapons) was compared to those who received only gender neutral goods (likely to be deposited with both males and

females, including knives, containers and nails) (see Table 12.3). Subadults received significantly fewer gendered grave goods relative to neutral goods than adults, but infants were not treated significantly differently to children (3+ years) or all older individuals (3+years) (see Table 12.4). The types and numbers of all grave goods deposited with infants (0–2 years) are presented in Table 12.5.

Case Study – Infant Grave #99

Three children were buried with apparent masculine grave good assemblages of weapons. Skeletons #16a (8–9 years) and #86 (7–8 years) were each buried with a spearhead, shield, knife and buckle; #86 also had a dog sitting approximately 10 cm above the feet. The third 'masculine' child was skeleton #99, aged at 1–2 years on the basis of dental eruption and long bone measurement, and buried with a spear, knife, buckle and a bronze ring; this child will be the focus of the case study.

Although weapons are associated with sexed, thus adult males, and the two older children could possibly have been apprentice warriors, or able to play warrior games, this does not provide proof that these children were male. These considerations cannot apply to #99 who, both physically and developmentally, would have been unable to wield a spear. At 19.7 cm the spearhead recovered from this burial is shorter than the average of the 19 Great Chesterford spears (25.1 cm), but it is still well within the range, being longer than five of them, three the property of adults. The spear was also placed in the grave in a way that it extended past the child's head, with the tip touching the end of the grave. This would tend to suggest that it was longer than the height of the child, a finding that may indicate it was not a specially

Table 12.5. All grave goods for infants (0–2 years) (data after Evison 1994).

	Pre-term (n=16)	*0–2 years (n=49)*
Brooch		2
Bracelet/anklet/finger ring		4
Pot/container	1	6
Amber beads		5
Monochrome glass beads		10
Polychrome glass beads		3
Roman coins		4
Spear		1
Knife		1
Buckle	1	1
Key		2
Ring	1	2
Pin		1
Miscellaneous bronze	1	2
Miscellaneous iron	1	4
Nail		5
Hobnail		2
Glass fragment		1

manufactured toy and that its placement is symbolic. It could be symbolic of the child's warrior role in the afterlife, or symbolic of the role the child did not live to assume, or placed to invoke the care of warrior ancestors (Waterman and Thomas 2011). It may represent the status of the child's family, or some other role or position. Archaeologists may ascribe an adult role to #99 due to the nature of the grave goods, although the individual had died in infancy, too young to participate in community activities (Evison 1994; Waterman and Thomas 2011). Yet, a spear may have a different meaning when carried by a child to that when it is carried by an adult.

The child was buried in a normal orientation of 60°, while the closest nearby graves were oriented at right angles to it, although still 'normal' (normal range is all excluding 116°–251° from true north). This grave was surrounded by burials largely lacking high status gendered grave goods – including three weaponless males and only one individual with a brooch. The infant #99 appears to be the highest status individual in the cluster (see Fig. 12.1). Was this child a 'foundation burial', the first burial in the group? Were great hopes held for the child that were shattered by early death? This child demanded notice at the time of burial, and still demands notice today. This glimpse of Anglo-Saxon life is short and shadowed by doubts and difficulties.

Discussion

Demography

The children of Great Chesterford were born into a society that buried everyone in the community cemetery. The demographic profile indicates high childhood mortality, with a lower life expectancy for women compared to men, a situation common for early populations (Evison 1994, 31; Waldron 1994, 59). The life table shows that 45% of Great Chesterford inhabitants died before their fifth birthday, but if an individual survived to reach that age, then they could expect to live another 19 years. This calculation is affected, however, by the difficulties of ageing mature skeletons and the entrenched under-ageing of older individuals (Lucy 2005; Cave and Oxenham 2016). It is reasonable to infer that, while there was high childhood mortality at Great Chesterford, any individual who survived the early dangerous years could hope for a reasonably long life.

Most fertility measures undertaken here suggest unremarkable levels of fertility, expected in an established agricultural community (Bocquet-Appel and Dubouloz 2004; Bellwood and Oxenham 2008). The modified $_{15}P_5$, conversely, can be interpreted as indicating a somewhat elevated fertility when compared to the data of Bocquet-Appel and Dubouloz (2004). As sub-five year olds make up 45% of the total assemblage, a relatively elevated level of fertility appears reasonable.

Burial Practices

While subadults aged 0–15 years were generally buried in shallower graves than adults, there are possible reasons for this other than lack of care or reduced energy

expenditure on children. Few graves have dimensions other than depth recorded, but 'most graves were the minimum size necessary to receive the body' (Evison 1994, 28). Given that it is more awkward to dig a deep small grave than a deep large grave (Crawford 1993, 85), it follows that grave depth should increase with size and therefore with age at death. Except for the 3–5 years age category (three deep 2–5 years graves are found in a cluster of deep burials, probably due to a slightly easier to dig soil matrix), this was the case. Shallow subadult burials may be solely related to the mechanics of grave digging (Crawford 1993), rather than an indication of lesser care or energy expenditure, but could also be caused by ambivalence due to the high infant mortality rate, and/or a reduced willingness to spend time and energy on children.

Although double burials of Anglo-Saxon children are uncommon, Great Chesterford is an exception (Crawford 2007, 86), with more children than adults interred in multiple burials and mostly with other children. Three multiple burials, mass grave #83a–f and double graves #95a–b and #150a–b, were listed as 'disturbed bones', but the reasons for the disturbance are not discussed. Perhaps the act of reopening the grave to inter another individual disturbed the contents or maybe the disturbance happened during the excavation. Whatever the reason, the fact that large numbers of such graves belong to the very young is suggestive of differential mortuary treatment.

Lewis (2007, 90) notes that clusters of infants have been interpreted as evidence for infanticide, suggesting grave #83, which contained six preterm individuals of 36–40 weeks gestation, as evidence, but it is difficult to entertain a definitive verdict for infanticide from the evidence for this burial. Evison (1994) suggests that the grave was marked and reopened when needed for the burial of a stillborn baby. It is possible that this grave was used by a single family or household, or even by one woman unable to carry children to full term. Each subsequent burial may have then disturbed the previous inhumation. Given that these multiple burials were not recognised until post-excavation it is difficult to know whether these, and the other disturbed infant burials in the cemetery, were caused by Anglo-Saxon burial practices or were a consequence of a hurried rescue excavation.

Despite the large numbers of disturbed infant burials, burial position clearly changes with age with most infants buried on their sides. Rather than seeing this as a form of indifference, we suggest that it may indicate a level of care, almost tenderness, in the placement of these very young individuals in their graves.

Non-Normative Burials

Throughout time and space, individuals have on occasions been buried in a way that marks them as different; these include prone burials, those without surviving grave inclusions, those buried with amuletic artefacts and burials containing large rocks. Children are the group most likely to receive non-normative treatment (Aspock 2008, 20). Non-normative burials occur at Great Chesterford, and both children (32%) and infants (49%) were found more likely to have been given a non-normative burial than adults (20%).

The largest category of non-normative burial is interment without grave goods, and all except three of the non-normative infants were in this category (although some displayed other forms of difference as well). Fifteen children were buried with nails and/or hobnails, suggesting the presence of an object that has otherwise decomposed and although such burials are suggestive that graves may have contained other items that have not preserved, those buried without surviving grave goods still deviate from the Anglo-Saxon norm. More children than others were buried with amuletic items, perhaps used to protect the child, rather than mark them as dangerous. The observation that more non-normative burials are those of children simply suggests they were treated differently to adults – it does not suggest reasons for this difference.

Grave Goods

The dearth of grave goods interred with children and infants in comparison to older individuals aligns Great Chesterford with other Anglo-Saxon cemeteries (Crawford 1999; Stoodley 1999). Subadults received the same types of goods as their older contemporaries, albeit fewer, and usually less prestigious types of brooches, necklaces and weapons. Only three infants had brooches (n=2) or weapons (n=1 spearhead; #99 see Table 12.5) but, with the exception of swords, shield bosses and sleeve clasps, the usual adult grave goods are represented in the infant graves. Contrary to Gowland's (2007, 59) finding that goods buried with Anglo-Saxon children less than four years old are usually 'gender neutral', the Great Chesterford infants and children were buried with gendered items as often as with neutral items; although a large proportion of children received no surviving grave goods. Neither children nor infants were treated significantly differently to older individuals in the deposition of pottery, suggesting that it was a universal grave good.

The situation regarding children and grave goods is complex. The first step for newly grieving Anglo-Saxon parents may have been to decide whether the deceased child should be afforded a cemetery burial, a step overwhelmingly taken at Great Chesterford (Lucy 1998, 48). Then they needed to decide what, if any, grave goods should be deposited. Symbolism plays an important role in the masculine burial rite (Härke 1990), but it can be argued that all grave goods are symbolic, as they have no practical use (Lucy 1998), although this does not take into account beliefs held by the burying community regarding the use of these items in the afterlife. Artefacts were consciously selected for burial in the knowledge that this would mean their 'death' (Crawford 2004, 91). It is possible that items, such as swords, were symbolic items in the living world, however, as well as in the realm of the dead, meaning that the burial ritual did not remove useful items from the material world.

The burial ritual may also have functioned as an aid to forgetting (Williams 2005). The visible role of deposited grave goods may have been symbolic and/or for display, but the removal of items from the sphere of the living may have been used to eliminate reminders of the dead person from everyday life. Most grave goods appear to be personal items – jewellery, dress accessories, knives and weapons – all reminders of

the deceased and the bereavement. The burial ritual not only provides a spectacle for congregated mourners, a final display to be remembered, but also removes symbols of loss from the everyday world while endowing the dead with their personal possessions. This means that low status is not necessarily the reason for the low numbers of grave goods deposited with the young. Young children, especially infants, have not created multiple relationships or established their individuality within the wider community. They also need little personal material culture – they have no tools of employment, no personal grooming equipment and few responsibilities. Infants are fed by their mothers, and have no need of showy adornments, although high status parents may endow their children with prestige items.

Crawford (1991, 18) suggests that in the burial ritual, a child's individuality may be subsumed by the status of the family and thereby become a 'text' by which the associated adult status can be read, but children are not given high status goods to the extent that adults are. This suggests that only some children are considered suitable to represent their high-status families, a representation downplayed or discounted, or that the highest status children are not displayed as such in the burial ritual. Alternatively, the child's individuality may be represented in the burial ritual.

Lucy (1998, 48) notes that burials without gender-designating items are rarely analysed as they 'cannot be accommodated in the traditional bipolar way of thinking'. One problem with such analyses is the non-specificity of such items. The most popular gender neutral items for infants are the container, or miscellaneous fragments of iron and nails. Containers may have contained food offerings, but it is difficult to infer meaning from fragments of rusty iron or to ascertain the use that nails were put to, other than to suggest that they are part of something almost completely decayed.

Gendered grave goods assemblages have reportedly been confirmed osteologically in most cases (Härke 1990; Stoodley 1999), although Lucy (1998, 34) suggests that skeletal analyses of burials have been rarely carried out or published in original reports. Although some individuals from Anglo-Saxon cemeteries are buried with the 'wrong' grave goods no such conflicts were identified at Great Chesterford. Despite this strong gendering, it is possible gender is not actually being displayed in the infant burial ritual, and the grave goods simply reflect the need to provide the child with their possessions while removing them from the realm of the living.

Sex determination of the Great Chesterford children through their grave goods has resulted in numbers of males and females which differ markedly from those expected and without expensive a DNA studies there is no way to confirm the patently skewed subadult sex ratio of 17 'females' to three 'males'. The cemetery population is also made up of individuals with gender-neutral assemblages or no surviving goods (Lucy 1997). Regarding adults, while it is claimed that their sex determination on the basis of material culture is osteologically supported in 99% of cases (Härke 1997), this approach is fraught with difficulties and gives rise to circular reasoning, while also surrendering to biases (Lucy 1997; Stoodley 1999). For subadults especially,

sex determination through grave goods is highly problematic – we do not know how pre-pubescent Anglo-Saxon children or Anglo-Saxon infants were conceptualised, let alone gendered, and this is not the way to find out. The relationship between sex, gender and grave goods should be investigated rather than assumed.

Conclusions

We have sought to shine a light on the lived experience of Anglo-Saxon children, with an emphasis on infants less than two years of age. The children of the Anglo-Saxon cemetery of Great Chesterford are uniquely placed to assist us as they, unlike most Anglo-Saxon children, were buried in their community cemetery.

The study of children in archaeological contexts is important because it is through children that a society is reproduced physically, culturally and socially. Childhood is more than biological age; it is a series of cultural and social episodes leading towards adulthood. Children are people, they are not things, not extensions of the adult world; they have thoughts, feelings, experiences, emotions, activities, spaces, material culture, negotiations, worldviews and lives of their own; they have agency and even the youngest infant is able to communicate through eye contact, movement and crying (Halcrow and Tayles 2008).

The large numbers of infant graves at Great Chesterford is a demonstration of the fragility of young lives, a fragility which would have been known and felt by the adult community. Great Chesterford parents buried their children in the cemetery, where they were able to express, disguise, deny or transform their feelings of sorrow or otherwise for their loss. The frequency of infant death may have affected attitudes; some parents may have gone through the motions to comply with community expectations, while for others the burial ritual may have been the expression of acute anguish. Nevertheless, the ritual must have had meaning for the community. Notwithstanding the multiplicity of possible emotional responses, the fact that these infants were buried in the neighbourhood cemetery suggests that they were considered worthy of burial and fit for inclusion among the adult dead. For some, this message conveyed all they needed to say or were capable of expressing; for others, the addition of grave goods was necessary.

Acknowledgements

This paper was made possible, in part, by an Australian Research Council Grant: FT 120100299. Thanks to Geraldine Cave for redesigning the map of Great Chesterford Cemetery.

Note

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APPENDIX 2 IDENTIFYING THE INVISIBLE ELDERLY

Identification of the Archaeological 'Invisible Elderly': An Approach Illustrated with an Anglo-Saxon Example. International Journal of Osteoarchaeology 26, 163-75.

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Current Status:

Accepted and Early Access 2014
Published February 2016

International Journal of Osteoarchaeology
Int. J. Osteoarchaeol. (2014)
Published online in Wiley Online Library
(wileyonlinelibrary.com) **DOI**: 10.1002/oa.2408

Identification of the Archaeological 'Invisible Elderly': An Approach Illustrated with an Anglo-Saxon Example

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ABSTRACT The aim of this paper is to present a method to facilitate age-at-death estimation of older individuals (generally those aged 50+ years) in a representative cemetery sample. The purpose of disaggregating catch-all categories, such as 50+ years, is to enable the exploration of the elderly (those in their 50s, 60s, 70s or 80s) in the context of mortuary archaeology, bioarchaeology and/or palaeopathology. The methodological steps include the following: (1) assessment of occlusal tooth wear in an Anglo-Saxon cemetery sample from Worthy Park, UK; (2) seriation of the sample, from youngest to oldest, based on the degree of tooth wear; (3) selection of an ethnographically derived model (known mortality profile) by which seriated individuals in the Worthy Park sample could be reallocated to more realistic or appropriate age classes; (4) reallocation of individuals in the seriated Worthy Park sample to the model age classes. A Hadza, Tanzania, hunter-gatherer profile was chosen to model the Worthy Park sample, although others are available. By using this model, some 66% of the entire adult sample, originally allocated to the single final age category of 45+ years, was distributed across four new age categories from the mid-40s to mid-70s. Relatively straightforward, this approach provides a way to identify those individuals, 50+ years old, not normally sensitive to traditional age-at-death estimation methodologies currently available. Copyright © 2014 John Wiley & Sons, Ltd.

Key words: age at death; mortality profiles; old age; Worthy Park

> Jurgi was already twenty-five, she realised. Few people lived much beyond thirty; Sunta had been unusual in living to see her granddaughters grow up.
>
> Baxter (2010)

Fictional accounts of life and the lifespan of imaginary characters in Mesolithic Britain (see above) reflect popular views on human longevity in the past, views that are arguably based to a significant extent on academic palaeodemographic research. Misconceptions regarding prehistoric lifespans are partly founded on a misunderstanding of the term 'average age at death', as well as on systemic methodological problems associated with many skeletal age-at-death estimation methods, many of which tend to underestimate true age in past populations. Although skeletal biologists are aware that historical sources confirm people lived much longer than the evidence from their skeletons might suggest (Cayton, 1980; Boddington, 1987; Miles, 2001), such recognition is often omitted.

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There are many reasons for misconceptions regarding the elderly in the past (and although not ideal, the term 'elderly' is used in this paper to refer to individuals aged 50+ years). High childhood mortality reduces the average age at death of cemetery samples, whereas taphonomic processes can differentially affect mortality distributions. For instance, some skeletal age indicators (e.g. the pubic symphysis) are less likely to survive in the skeletal tissues of the elderly, thus rendering them invisible in a demographic profile (Gowland, 2007). Errors in age-at-death estimation can also result from systematic methodological problems and/or can be a function of the specific demographic reference population used to generate age estimation tables (Boddington, 1987). One particularly significant factor is the poor correlation, in older adults, between traits used to estimate osteological (biological) age and calendar age (Boddington, 1987).

Unlike subadult age estimation, which is essentially based on an assessment of osteological and dental signatures of growth and development, estimation of adult age at death is focused on skeletal and dental signs of degeneration, which are influenced by multiple factors including, but not exclusive to, activity, diet, disease and genetics, at both the individual and population levels

Received 3 *January* 2014
Revised 30 *April* 2014
Accepted 19 *June* 2014

(Aykroyd *et al.*, 1999; Kemkes-Grottenthaler, 2002; Appleby, 2010; Roksandic & Armstrong, 2011). As a consequence, the reliability of age-at-death estimation declines rapidly after the age of 45–50 years (Aykroyd *et al.*, 1999). This reduction in accuracy is dramatically demonstrated by Molleson *et al.* (1993), who, using the well-regarded complex method (Acsádi & Nemeskéri, 1970) on the Spitalfields sample of known age at death, aged less than 30% of the sample to within 5 years, half to within 10 years and three quarters to within 15 years of their actual age. Even using broad age categories of immature, under 35 years, middle aged and over 45 years, only 2% of individuals were overaged, whereas 58% were underaged (Molleson *et al.*, 1993: 167). Such a significant bias has important implications for the age estimation of mature adults in any skeletal collection, with the prospect of entrenched underestimation of age at death in the elderly (Lucy, 2005).

Another consequence of the various issues affecting age-at-death estimation flows from the age aggregation classes used, particularly the upper age category. By using Anglo-Saxon England as a case in point, at the cemeteries of Empingham, Tallington, Great Chesterford and West Heslerton, the highest age category employed is 45 + years (Waldron, 1994; Timby, 1996; Haughton & Powlesland, 1999; Albone & Leahy, 2000); at Westgarth Gardens, Bury St Edmunds, it is 50+ years (West, 1988), whereas at Berinsfield, the oldest category was further divided into two sub-categories, 40+ and 40++ years (Boyle & Dodd, 1995), a practice that at least acknowledges that some mature individuals are older than others. The Anglo-Saxon cemetery at Worthy Park, Kingsworthy, Hampshire, has been provided with an oldest category of 50+ years, although one individual was aged 45–55 years (Wells *et al.*, 2003).

If the oldest age category in a sample is determined to be 45+ years, as seen earlier, then it follows that the mean age at death will be significantly lower than 45 years (Cox, 1999). Although there may be good methodological reasons for such a low 'minimum oldest age-at-death category', the net result is a perpetuation in the belief that the mean age at death in the past was significantly lower than in modern populations. Bioarchaeologists produce demographic profiles that appear to suggest that no individual lived longer than the age (or range) of the upper age bracket (Aykroyd *et al.*, 1999); they do not deny the existence of such individuals but instead render them invisible.

An illustration of the disparity between historical and skeletal sources comes from Cayton (1980), who studied historical texts to examine the longevity of a sample of 200 Anglo-Saxons (181 men and 19 women) consisting largely of kings, nobles and religious elites. Although recognising the limitations of ancient texts, Cayton compared the ages at death of individuals mentioned in the texts with those of the skeletal population of Anglo-Saxon North Elmham (which may well have contained religious elites; Wade-Martins & Yaxley, 1980). The average age at death of the kings, nobles and bishops from historical sources was 57.7 years (range 18–68+ years), whereas the North Elmham cemetery's average age at death was estimated, through skeletal methods, at 37.9 years (range 18–48+ years). The difference is unlikely to be due to differences in status: the archaeological evidence suggests that the community of North Elmham was a prosperous one, with Cayton highlighting evidence from Russell (1966), who in examining English medieval demography found that the life expectancy of peasants and landholders during the period AD 1245–1347 was not significantly different. The Anglo-Saxon society of North Elmham showed narrower class distinctions than that in the later period, suggesting that if 'there was little differential mortality between social classes in the medieval period, there should certainly be none in Anglo-Saxon times' (Cayton, 1980: 305).

Age-at-death estimation methods with relatively low upper limits also help to bring about the phenomenon of 'attraction to the middle', described by Masset (1989), where the age-at-death profile of a sample peaks at approximately 35 years (Gowland, 2007). This age allocation bias occurs because of the innate age estimation error ranges regardless of the age estimation technique employed, errors that are assumed to cancel out with sufficiently large samples (Masset, 1989). However, this assumption only holds true for middle age ranges, as the errors for the oldest and youngest categories can only drift one way, towards the middle.

The use of rather low upper age classes (e.g. 45+ years) has long been accepted, with the result that it is often assumed that medical advances and improvements in nutrition and sanitation, which have undoubtedly reduced modern mortality rates, have also increased the human lifespan. Notwithstanding modern healthcare systems, in the past, some individuals lived to be 80, 90 or even 100, and although more people live to these ages today, few of us still survive much beyond a century (Hill, 1993). It has also been shown that there is a great similarity between the population profiles of a range of pre-industrial groups, suggesting that there is a typical human demographic distribution (Weiss, 1973; Paine, 1989; Gurven & Kaplan, 2007). It appears that humans have inbuilt schedules not only for growth and reproduction but also for mortality (Hill, 1993); these schedules are probably the result of evolutionary processes.

To assess the hypothesis that human 'mortality patterns, the timing and pace of development and

senescence evolved during our hunter-gatherer past' and thus are part of a 'characteristic life span for our species', Gurven & Kaplan (2007: 321–322) examined the mortality profiles of modern hunter-gatherers and forager-horticulturalists. This dataset included 'all extant hunter-gatherers for which sufficient high-quality demographic data exist' and 'is the most complete set of pre-industrial populations available' (Gurven & Kaplan, 2007: 321–322). Because of the nature of global settlement patterns, these groups come from largely tropical areas, with some sub-tropical groups, while encompassing a wide geographic range including the Americas, Australia, Africa, Europe and Island South East Asia. They concluded that the 'modal age of adult death is about seven decades', after which people are more likely to die than live (Gurven & Kaplan, 2007: 322). Our study relies on this assumption that, regardless of subsistence orientation, archaeological populations share similar demographic profiles and thus provide a possible way to bypass the ceiling on maximum age-at-death estimation.

Many researchers believe that contemporary traditional societies provide a suitable template from which to infer skeletal profiles of ancient populations (e.g. Weiss, 1973; Milner *et al*., 1989; Paine, 1989; Hoppa, 2002; White, 2014). Because a cemetery population is likely to represent a specific community, with predictable demographic patterns, it should be able to be modelled using known population profiles, or profiles created using known demographic data, although it is necessary to make certain assumptions (e.g. stationary population and uniformitarianism; Hoppa, 2002). Scholars have often used the life tables of Coale and colleagues as models for their work (Coale & Demeny, 1966; Coale *et al*., 1983). They themselves used data from both birth and death registrations and censuses from all areas of the world (although Europe is overrepresented to a large extent) to construct male and female model life tables, in order be able to estimate demographic parameters in difficult-to-assess populations (Coale & Demeny, 1966; Coale *et al*., 1983). These tables are grouped into four 'geographical' regions called north, south, east and west, although these regions are not defined. The 'west' regional table appears to be most popular for reconstructing the demography of traditional societies (e.g. Weiss, 1973; Milner *et al*., 1989; Paine, 1989).

Weiss (1973), who uses such a model, argues that many archaeological populations are too small or too poorly recorded to be demographically useful, and in addition, both demographic and census data of people over 55 years of age are unreliable. Because of such concerns, he developed model life tables with a variety of fertility and mortality rates to facilitate assessment of archaeological data, and to generate further demographic data (Weiss, 1973). He explicitly ignores all individuals over 55 years of age (Weiss, 1973: 12) and instead uses models based on Coale & Demeny's (1966) 'west' tables to generate likely profiles in order to infer life expectancy, survivorship and mortality rates. Although his aims and methods differ to ours (and he was not specifically concerned with the identification of elderly individuals), Weiss does demonstrate that the use of models to simulate the older section of a population can be a useful approach.

Milner *et al*. (1989) also provide evidence that demographic profiles based on extant societies can be used to model archaeological populations. Specifically, they seek to demonstrate that age-at-death data from extant traditional societies can be used to test inferences about demographic and cultural processes, including fertility and mortality rates. They also use Coale & Demeny's (1966) 'west' tables, alongside birth and death rates from two well-studied traditional societies, to create their models, which are in turn compared with archaeological skeletal series. They do not venture beyond the upper age limit of 45+ years, and indeed, their modelling method is a means of generating age-at-death schedules (rather than individual ages at death) as a first step in a process of exploring further demographic and possibly cultural trends. Nonetheless, their method suggests that the use of such models is appropriate for a range of purposes, including, by extension, extending the age at death for older individuals in a skeletal sample.

Paine (1989) also uses the 'west' regression coefficients of Coale & Demeny (1966) to construct model life tables and population distributions. These are then compared with appropriate skeletal populations, using maximum likelihood estimation, to determine the best fit. This allows him to infer characteristics of the ancient population, including gross reproductive rate, crude birth rate and life expectancy. His analyses highlight 'the degree of fit between archaeological samples and typical human distributions', but, like many studies on ancient populations, the highest age category is 45+ years (Paine, 1989: 60). He also notes that sample size in ancient populations often 'limits the potential for subgroup analyses' (Paine, 1989: 60), a difficulty also relevant to our study when considering the differential effects of sex on tooth wear and subsequent age-at-death estimation.

More recently, White (2014) uses a computer-generated agent-based model (in which agents represent hunter-gatherer individuals in a traditional society) to explore the ratio of old to young adults (the OY ratio). He does this to test the conclusions of Caspari & Lee (2004), who found a trend of increased survivorship in the evolution of four hominid groups from Australopithecines to modern humans, as well as to

examine the ways in which the OY ratio reflects the mortality, fertility and mean adult age of a population. In this study, older adults are those above 30 years, so it is not examining extended longevity, although it supports the conclusions of Caspari & Lee (2004) who inferred an evolved dramatic increase in survivorship in modern humans. As in the current study, White uses modelling to simulate demographic traits of past populations.

Palaeodemographic reconstructions of past populations are dependent on the accuracy of age-at-death distributions (Hoppa & Vaupel, 2002: 3). 'The Rostock Manifesto' calls for more 'reliable and more vigorously validated age indicator stages as categories' as the first element in reconstructing demographic profiles of past populations (Hoppa & Vaupel, 2002: 2). The second element has for the most part included a focus on Bayesian techniques to deal with the effects of age estimation errors at the population level (Boldsen *et al.*, 2002). Chamberlain (2006) provides a very useful summary of Bayesian approaches to age estimation. Briefly, Bayesian approaches seek to generate posterior probabilities of age that are weighted (the prior probabilities) using a range of techniques, a popular one of which is the use of ethnographically (or historically) derived model populations. An important point, in the context of our own aims, is that a set of probabilities that a given individual belongs to a series of age classes is provided, rather than a single age estimate. In other words, individuals are redistributed across an age (mortality) distribution in order to develop a more realistic demographic profile. Without doubt, such approaches have enormous value at the population level but cannot be used to disaggregate age classes or, more importantly, identify specific (elderly) individuals.

The aim of this paper is quite different to previous work in this field, in as much as we wish to present a method to allow the identification of older individuals (generally those aged 50+ years) in a representative cemetery sample. The purpose of disaggregating catch-all categories, such as 50+ years, is to facilitate the exploration of the elderly (those in their 50s, 60s, 70s or 80s) in the context of mortuary archaeology, bioarchaeology and/or palaeopathology. Studies examining the differential effects of biological and/or social realities of the lives of people in the past allow us to glimpse otherwise bio-socially invisible facets of the lived past. In the Anglo-Saxon literature, scholars have examined traits such as gender (e.g. Lucy, 1997; Stoodley, 1999), childhood (Crawford, 1991, 1999; Stoodley, 2000) and social identity (Härke, 1990, 1997; Lucy, 2010; Sayer, 2013), in the context of biological sex, age and social status. Although some work has been performed on the social effects of ageing itself (e.g. Crawford, 2007, who had to rely on historical sources to augment the slim pickings of cemetery or skeletal data), the aggregation of skeletons into catch-all categories (e.g. 50+ years) makes differentiating between say, a healthy, active person of 50 and a mobility-challenged 80-year-old very difficult, although the abilities, activities and societal perceptions of these two people are widely different. Similar limitations apply in the areas of bioarchaeology and palaeopathology. The proposed approach to disaggregating catch-all oldest age categories in cemetery samples provides the opportunity to study what is currently a bioarchaeologically invisible demographic cohort. The method is illustrated with reference to an Anglo-Saxon cemetery sample from Worthy Park, Kingsworthy, near Winchester, Hampshire in the UK (Hawkes & Grainger, 2003).

Methods and materials

A total of 59, of the 105 individuals originally reported, from the Anglo-Saxon cemetery site of Worthy Park, Kingsworthy, near Winchester, Hampshire in the UK were examined and assessed for occlusal tooth wear. Human remains from the site, excavated in 1961 and 1962, were originally curated at the Duckworth Laboratory in Cambridge by specialist technician Bernard Denston (Hawkes *et al.*, 1983). Although Denston restored, photographed and recorded a range of data on the collection, portions of the collection were shipped to the British Museum (Natural History) in London by Don Brothwell, and a final report was not published. The well-known British palaeopathologist Calvin Wells examined the human remains in the 1970s, with a report (which includes age-at-death estimations, albeit without any reference to the methods used) posthumously authored by him more than two decades after his death (Wells *et al.*, 2003).

The Worthy Park cemetery was in use for a maximum of two centuries, from the middle of the fifth century AD to the middle of the seventh century AD (Hawkes & Grainger, 2003). The excavators estimate that the associated settlement could have held approximately 40 individuals at any one time, although this calculation is based on an average lifespan of 28 years (Hawkes & Grainger, 2003). The inhabitants most likely lived in small farmsteads and practised mixed farming at a subsistence level, with a diet that probably consisted of fresh and dried meat and fish, nuts, fruit and grains (barley and rye) ground by hand in stone querns for making bread (Miles, 1962; Hawkes & Grainger, 2003: 882; Lucy *et al.*, 2009). Anglo-Saxon settlement evidence suggests that individuals lived

and worked side by side in mixed social groups with narrow distinctions between rich and poor (Cayton, 1980; Härke, 1997).

The methodological approach is based on the principle that occlusal tooth wear is significantly correlated with age and that a sampled population can be seriated from youngest to oldest based on the degree of tooth wear (e.g. Lovejoy *et al.*, 1985; Walker *et al.*, 1991). Lovejoy *et al.* (1985) found that dental wear is the best single variable for determining age at death in skeletal populations, as it is consistently without bias and has relatively high accuracy. Its usefulness is based on the observation that wear of the teeth is continuous throughout life, is unidirectional and occurs at a similar rate in individuals exposed to foodstuffs of comparable toughness and abrasiveness (Miles, 1962). One advantage of using tooth wear for age seriation is that the standards are established within the population being analysed (Lovejoy *et al.*, 1985). Wear is most regular on the first and second molars, whereas the third molar is less reliable because of its variability in form and the time it takes to reach full occlusion, if it does at all (Mays, 2010: 57). Consequently, this study uses only the first two molars for wear assessments. Dental wear analysis is a valuable tool for age-at-death estimation (Lovejoy *et al.*, 1985; Walker *et al.*, 1991), while being highly sample or population specific (Walker *et al.*, 1991; Aykroyd *et al.*, 1999; Miles, 2001).

The practice of seriating age estimation traits is not new. Lovejoy *et al.* (1985) note that seriation reduces observer error and is useful for age estimation purposes. Our approach is similar to that of Lovejoy *et al.* (1985) in that it relies on a community sample and comparison between cases to fine tune age-at-death estimation. Unlike the method of Lovejoy and colleagues, our technique is suitable for use on populations with poor preservation, as long as teeth have survived. We use known demographic profiles to generate models to infer ages for skeletons that osteologists are unable to age beyond 45+ years. We have chosen to apply a series of categorical age classes (i.e. 45–55 years) as we (obviously) cannot independently verify the age at death of individual cases from an unmarked Anglo-Saxon cemetery. Nonetheless, we consider such classes to be more useful than 'catch-all' categories such as 50+, especially for the purpose of further studying age-related bio-social variation.

A possible source of error (for any age indicator) is sexual dimorphism in tooth wear. Various studies have shown differences in rate of wear due to sex (e.g. Da-Gloria & Larsen, 2014), usually with women exhibiting higher wear rates, or no differences in wear rates due to sex (Lovejoy, 1985). Ideally, the development of sex-specific wear models is preferred. Unfortunately, this could not be done because of reduced sample size effects (Paine, 1989).

The methodological steps include the following: (1) assessment of occlusal tooth wear using Scott's (1979) four-quadrant method; (2) seriation of the sample based on degree of tooth wear; (3) selection of a model(s) by which seriated individuals in the Worthy Park sample could be reallocated to more realistic or appropriate age classes; (4) reallocation of individuals in the seriated Worthy Park sample to the model age classes. These steps are detailed in the following.

Assessment of occlusal wear

The surface of every complete first and second molar of each assessable individual was divided visually into four equal quadrants, each of which was scored separately using the methodology outlined by Scott (1979). Average M1 and average M2 wear scores were calculated for each individual, where a minimum of at least one M1 and/or one M2 was required for any single individual. Functions (using least squares regression) were also developed in order to estimate M1 average wear where only M2 wear values were present for a given individual, and vice versa. While edentulous individuals were not encountered in this study, they can be included in this sort of seriation. Where edentulism is entirely ante mortem, such cases could be placed at the 'oldest' end of the seriation. Where tooth loss is post mortem (this could also be carried out with ante mortem cases), seriation of the sample would also need to include other independent methods of age-at-death estimation if such cases were to be included in the study sample.

Seriation

By using the average M1 and M2 dental wear calculated for each individual, the sample was seriated from least to most dentally worn. The original age-at-death estimates established by Wells *et al.* (2003) were compared with the seriated values, with special attention paid to any inconsistencies. Any marked deviation from original age-at-death estimates by Wells *et al.* (2003) and relative age at death by occlusal tooth wear seriation was noted and reconciled if possible.

Development of an appropriate mortality model

The next step was to find a more realistic population mortality profile (the model) to apply to an Anglo-Saxon cemetery like Worthy Park. Gurven & Kaplan (2007) examined mortality profiles for 21 groups of

recent hunter-gatherers, forager-horticulturalists and acculturated forager-horticulturalists, as well as a cohort from 18th-century Sweden. Although they found some level of differential mortality among these disparate samples, these were small, and they concluded that 'similarity in mortality profiles of traditional peoples living in varying environments is impressive' (Gurven & Kaplan, 2007: 322). Weiss (1973: 42) also notes that 'the great demographic similarity between pre-industrial populations is quite convincing', and Paine (1989: 60) highlights 'the degree of fit between archaeological samples and typical human distributions'. In light of these findings, it would appear that the choice of model is not a fundamentally important issue. Nonetheless, it is worth noting that although Worthy Park inhabitants were neither hunter-gatherers nor forager-horticulturalists, they were pre-industrial farmers, lived in small farmsteads and lacked access to modern medical intervention, drugs, nutrition and sanitation.

For the purposes of this paper, both a Hadza (n = 125) hunter-gatherer mortality profile (Blurton Jones *et al.*, 2002) and an 18th-century Swedish horticulturalist mortality profile (n = 100 004; Sundbärg, 1906) were initially assessed for the purposes of providing a model for the Worthy Park sample. They were chosen because their mortality profiles are similar to that of Worthy Park when constructed using the same age classes. The Hadza model would appear to be a more 'primitive' model, thus closer in that aspect to that of Sweden; however, the lifestyle of the Swedes is more likely to be close to that of the Anglo-Saxons. In fact, both profiles are remarkably similar, supporting the view of the general 'typicality' of pre-modern demographic profiles.

As it can be assumed that individuals aged 15 years or younger can be more accurately aged using osteological criteria sensitive to developmental changes over childhood, truncated mortality profiles starting at 15+ years were used to model the Worthy Park sample. For the Hadza sample, 88 individuals were aged 15+ years old at death, whereas for the Swedish sample, 61 421 were aged 15+ years old at death. For each of these samples, the proportion of individuals in each 10-year age category was calculated, up to a final age category of 75 + years. The highest originally reported age category for the Hadza sample was 75+ years, whereas for the Swedish sample, it was 105+ years, with approximately 4.5% of the entire sample aged 85+ years.

Reallocation of the Worthy Park sample to an appropriate mortality model

The proportion of individuals occurring in each of the 10-year age classes for the Hadza and Swedish samples was used to reallocate individuals from the seriated Worthy Park sample. For instance, 15/88 (17.05%) Hadza were aged 15–25 years (the youngest age category), which equates to 6.99/41 (17.05%) or approximately seven Worthy Park individuals. In this case, the seven individuals with the lowest wear scores were allocated to this age class. The same process was used to reallocate all Worthy Park individuals to both the Hadza and Swedish models.

Results

Anglo-Saxon Worthy Park mortality profile

Figure 1 shows the complete mortality distribution (n = 91) for Anglo-Saxon Worthy Park using, as near as practically possible, the age-at-death estimations of Wells *et al.* (2003). The Hadza and 18th-century Swedish samples are provided for comparison. Figure 2 shows the effect of using the Worthy Park age categories to re-package both the Hadza and Swedish populations, in this instance using truncated profiles, with the youngest age class set at 15–25 years for each of the three populations. Figure 3 replicates Figure 1, but using the truncated age distributions. Note the low proportion of Worthy Park subadults, not uncommon in Anglo-Saxon cemetery samples, in Figure 1 and the high proportion of Worthy Park individuals aged 45+ years in both Figures 1 and 3. It is also worth pointing out the close similarity between the Hadza and Swedish mortality distributions for adult age classes (especially in Figure 3). Nonetheless, it can be seen that the Swedish sample has a smaller proportion of individuals aged 15–25 years and a greater proportion aged 75+ years than the Hadza sample. Part of the reason for a higher proportion of 75+ years in the Swedish sample is that 75+ years is an aggregate of several post-75 years' age categories, up to age 105+ years, in this sample. The reason for the elevated proportion of Hadza individuals in the 15–24 years' age category is unclear, although informants reported that five individuals in this age class were women that died in childbirth. Elevated levels of young female mortality in pre-industrial populations, both past and current, are often ascribed to risks associated with pregnancy and childbirth (Willis & Oxenham, 2013). Although we advocate for the presence of typical pre-industrial demographic profiles, there is still choice in the use of models. In this instance, we have chosen the Hadza model as the most appropriate sample to represent Anglo-Saxon Worthy Park because of the similarity between these two populations with respect to the

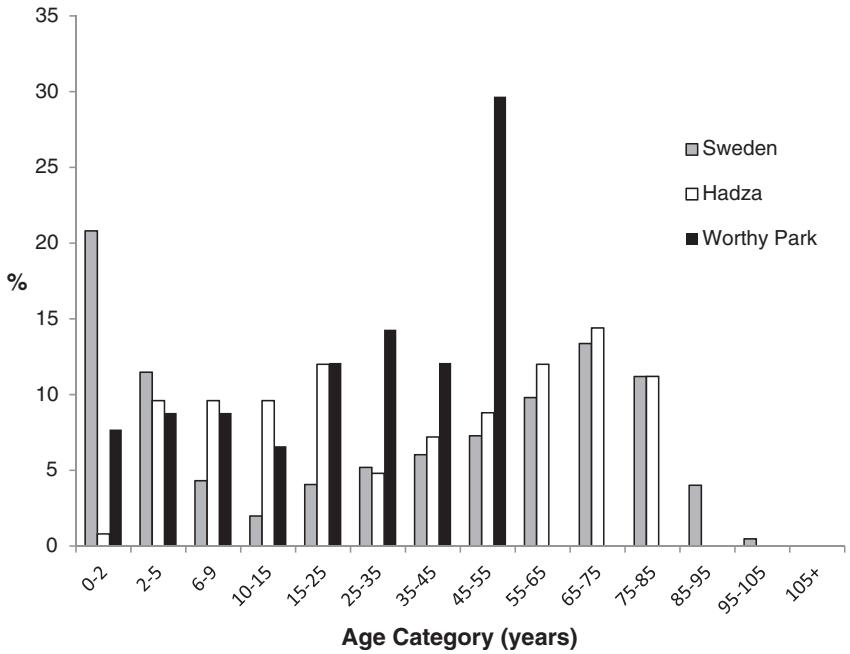

Figure 1. Complete mortality profiles: Worthy Park, n = 91 (Wells et al., 2003); 18th-century Sweden, n = 100 004 (Sundbärg, 1906); Hadza, n = 125 (Blurton Jones et al., 2002).

subadult-to-adult ratio. Indeed, the $_{15}P_5$ ratio (Bocquet-Appel & Naji, 2006) is quite similar for the Worthy Park and Hadza populations (0.22 and 0.27, respectively), whereas the Swedish sample is relatively quite low (0.12). Whatever model is chosen, and there are many available, the process of allocating individuals from the archaeological sample of interest is the same as outlined here.

Of the total available sample, occlusal tooth wear could be assessed for 48/76 individuals aged from as young as 6 years (when the first molar generally erupts). A total of 39/48 individuals had both first and

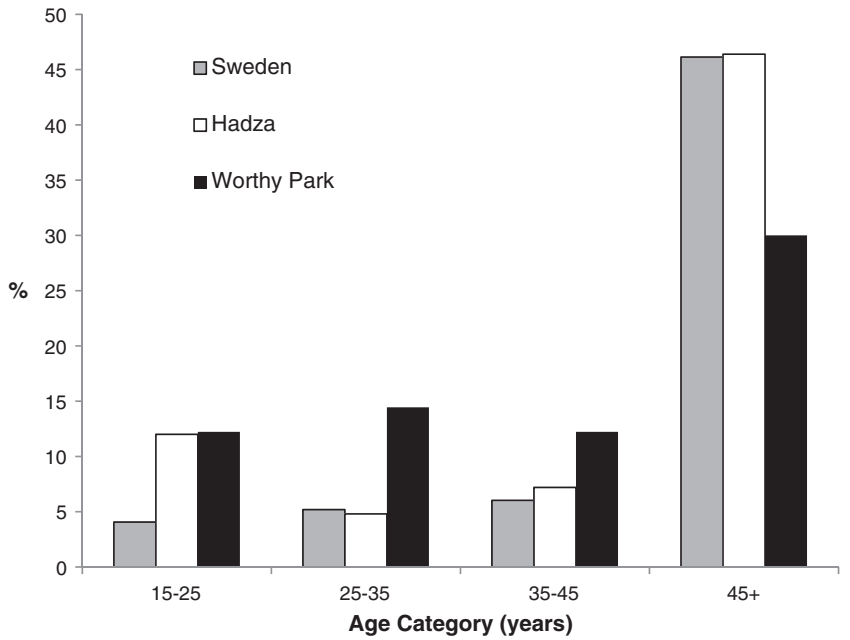

Figure 2. Truncated (excludes subadults aged less than 15 years) mortality profiles fitted to the Worthy Park age categories.

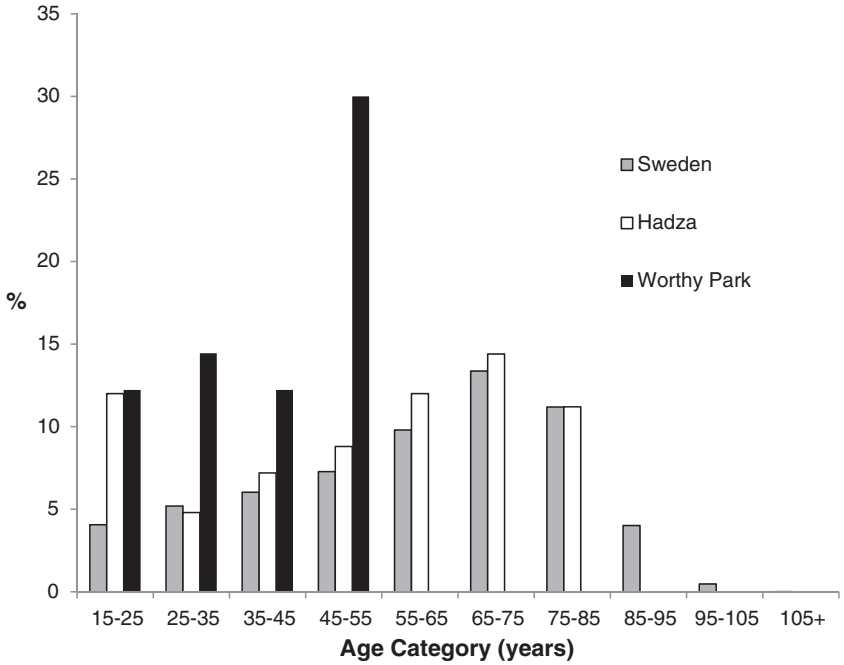

Figure 3. Truncated mortality profiles: Worthy Park, n = 44; 18th-century Sweden, n = 61 421; Hadza, n = 88.

second molars that could be assessed for occlusal tooth wear. These 39 cases were used to develop functions to estimate M1 wear where only M2 wear was available and vice versa. Regressing M1 on M2 tooth wear, in order to estimate M1 tooth wear, provided a significant ($F = 227.69$, $p = 0.000$) correlation ($r^2 = 0.86$) and relatively small standard error of estimate (M1 wear = M2 × 0.927 + 2.0510 ± 0.6902). Regressing M2 on M1 tooth wear provides the following function for estimating M2 wear: M2 wear = M1 × 0.927 − 1.3836 ± 0.7485. These functions allowed the estimation of M1 wear in an additional two cases and M2 wear in seven cases to provide average M1 and M2 tooth wear scores for a total of 48 individuals.

Of the 48 Worthy Park individuals able to be seriated on the basis of dental wear scores, seven were excluded from further analysis as they were aged less than 15 years old. Figure 4 shows the results of the Worthy Park sample reallocated to the truncated Hadza model on the basis of tooth wear seriation.

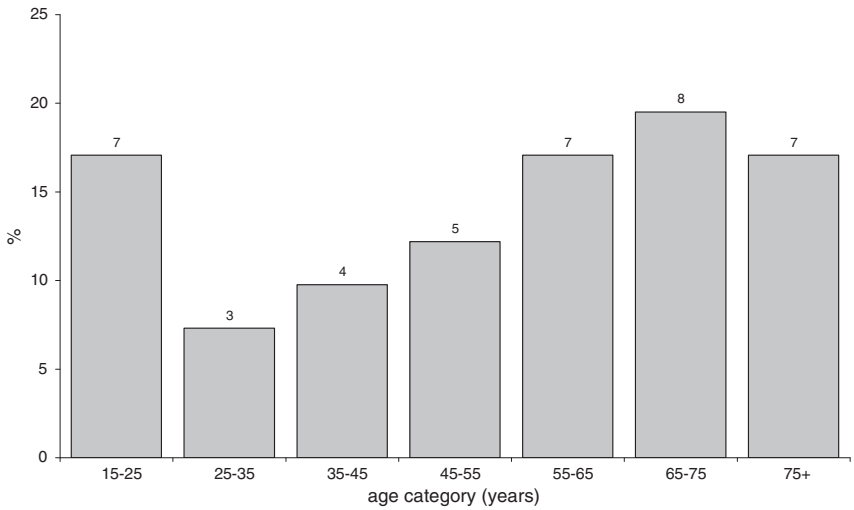

Figure 4. Worthy Park seriated sample (n = 41) fitted to the Hadza model. Bar labels refer to the number of Worthy Park individuals reallocated to each age class.

The actual number of Worthy Park individuals allocated to each of the model's age classes is given above each bar in the figure. Overall, there is good agreement between the original Wells age estimates and the seriated sample (Table 1). Of the 27/41 individuals allocated to age categories 45+ years, only five (18.5%) were originally assessed by Wells *et al.* (2003) as being potentially less than 45 years old. Moreover, two of these five individuals have rather ambiguous age estimates of 30+ years. Of the 14/41 individuals allocated to age categories below 45 years, 3/14 have been assigned to age classes seemingly inconsistent with the estimates of Wells *et al.* (2003): two cases aged 50+ years have been assigned to 23–35 years, and one aged 30–40 years has been assigned to 15–25 years. In all three instances, it is unclear, from the level of preservation and the skeletal elements present, how age-at-death estimates could have originally been carried out. Without recourse to the original material available and specific methods used to estimate the age of each individual by Wells *et al.* (2003), it is not possible to reassess these cases.

Table 1. Comparison of new age class allocations to Wells' original age classes

New age class	Burial no.	Wear score	Wells' age
75–85	49	9.00	50+
	42a	8.75	40+
	39	8.69	40–50
	50	8.38	40–50
	77	8.38	40–50
	63	7.66	45
	72	7.54	45–55
65–74	20	7.17	50+
	41	6.97	50+
	3	6.93	50+
	12	6.88	50+
	36	6.71	30–40
	11	6.69	Adult
	16a	6.44	40–50
	30	6.44	Adult
55–64	2	6.38	50+
	14	6.19	40+
	90	6.00	35–45
	9	5.94	30+
	24	5.78	35–45
	18c	5.36	40–50
	93	5.13	30+
45–54	38	5.06	25–35
	13	4.93	30+
	80	4.88	50
	17b	4.81	30–40
	61	4.75	30–35
35–44	85	4.73	25–35
	10	4.56	Adult
	53	4.53	25
	60	4.44	24–25
25–34	27[a]	4.38	50+
	32[a]	4.19	50+
	34	4.19	30–40
15–24	81	4.00	18–30
	33[a]	3.98	30–40
	22	3.79	25–30
	45	3.61	18–30
	84	3.31	18–20
	18a	3.28	21–25
	71	3.03	16–17

[a]Cases with low tooth wear scores relative to Wells' age-at-death estimation.

Discussion

The approach outlined in this study provides a way in which to disaggregate the 45+ and 50+ final age categories often used in bioarchaeological mortality profiles. The method involves modelling an archaeological population of interest on an appropriate known mortality profile, with a number of hunter-gatherer and pre-industrial mortality distributions available.

The value of the approach we have outlined is based on two assumptions: (1) there is a demonstrable relationship between tooth wear and age at death; and (2) known pre-industrial mortality profiles can meaningfully be used to model age-at-death distributions in archaeological samples. With respect to the first issue, there are a number of studies that have fruitfully employed various systems of tooth wear analysis in estimating age at death in archaeological and recent samples. Miles' (1963, also 2001) study is perhaps the best known and successfully tested (Nowell, 1978; Kieser *et al.*, 1983) method for estimating age at death from tooth wear. Recent work (e.g. Millard & Gowland, 2002) has attempted both to increase the accuracy of such approaches and to deal with the issue of systematic underestimation of age in the older age class using Bayesian statistical approaches. Moreover, Bayesian methods have been employed in estimating age at death in recent forensic cemetery populations, albeit with less certainty due to the confounding effects of heterogeneity in individual dental wear with multi-origin samples (Prince *et al.*, 2008).

Indeed, others have noted the issue of interpersonal heterogeneity in tooth wear rates and suggested tooth wear records factors other than age at death (Boldsen, 2005). However, the broad temporal span of the cemetery (ca. 200 years) Boldsen (2005) analysed, with the likelihood of variability in diet by temporal phase, and the unknown, but more than likely, differential social status (and by proxy diet) in the sample were the major contributors to the observed heterogeneity. If such issues could be controlled for, the correlation between dental wear and age at death would presumably improve. On balance, there appears to be good

evidence for a strong association between the degree of dental wear and individual age at death in pre-industrial populations in particular, and even in some modern populations (e.g. Prince *et al.*, 2008).

Where this study differs from others that have used dental wear to explore age at death is that we are not concerned with establishing wear trajectories in known-age subsamples (e.g. Miles, 1963; Millard & Gowland, 2002) in order to predict age in unknown cases. On the assumption, which appears valid, that increasing levels of tooth wear is positively correlated with increasing age at death, we use tooth wear to simply seriate individuals in an archaeological sample (Worthy Park) from least dentally worn to most dentally worn. Tooth wear, in and of itself, is not used to estimate the age at death of any individuals in the Worthy Park sample. Nonetheless, we do assume that, by and large, whatever the actual underlying age structure of the sample, our seriation will reflect the relative age of each individual.

Further evidence for the correlation between age at death and tooth wear can be seen where the seriated sample is consistent, for the most part, with the independent age-at-death estimates made by Wells *et al.* (2003; Table 1). Ideally, it would be useful to test this method on a population of known age at death. However, the majority of known age-at-death samples are not made up of a single homogenous 'community' with similar food and chewing practices, as an ancient cemetery sample is likely to be (Lovejoy *et al.*, 1985; Boldsen, 2005). This issue of non-homogeneity can be seen in the study of Prince *et al.* (2008), which applied a Bayesian statistical method, transition analysis, based on the Gompertz–Makeham hazard model, to estimate ages at death of a dataset of modern Balkans individuals of known ages. Although they found an overall trend of tooth wear increasing with age, the age ranges associated with each tooth wear phase were extremely wide, ranging from 44 years (17–61 years in phase 1) to 71 years (17–88 years, Phase V). Their study was hampered not only by limited access to one single rooted tooth from each individual (no molars, which exhibit the most reliable wear; Mays, 2010), but also by the nature of their dataset: although all subjects came from the Balkans, they did not belong to a single population accessing similar food and living in similar environments, as would be the case in an archaeological cemetery population. As dental attrition is population specific, the use of modern datasets as reference collections of known age at death is problematic in a study of dental attrition. Finally, although not attempted here, the seriation can potentially be calibrated against independent age-at-death indicators (e.g. Nowell, 1978; Lovejoy, 1985), although the lack of any generally accepted age estimation signatures for individuals aged 50+ years means that older individuals cannot be calibrated in such a manner.

Turning to the second issue highlighted earlier, assigning individuals from the Worthy Park sample to age classes involved the employment of an appropriate pre-industrial mortality profile, where the individual ages at death were known with certainty. Gurven & Kaplan (2007) note that the 21 populations they studied, which included hunter-gatherers, forager-horticulturalists, acculturated foragers and even a large 18th-century Swedish sample, demonstrated a great deal of similarity in mortality profiles. Moreover, they conclude that the modal age of death, regardless of subsistence orientation, environment or time period, is approximately 70 years. This provides a robust basis of support for the use of derived mortality profiles for modelling age-at-death profiles in archaeological samples.

Although the use of a typical ethnographically or historically derived demographic model would seem to be the best approach, the bioarchaeological context of any given cemetery sample may need to be considered when considering the most appropriate basis from which to fit a model mortality distribution, where the chief aim is to disaggregate the concentration of older individuals in a sample. In some instances, bioarchaeological evidence for intense interpersonal conflict (e.g. warfare) or high levels of infectious disease (e.g. mortality peaks in young adults) will mitigate against the use of a generalised traditional forager or agriculturalist model, and other, more appropriate, models will need to be sought. In the case of Worthy Park, the bioarchaeological evidence points to a relatively typical (no evidence for undue levels of mortality due to violence or infectious disease) population, potentially not dissimilar to a modern forager profile, such as the Hadza. Indeed, there is little difference between the Hadza profile and that of an 18th-century Swedish agriculturalist profile (Gurven & Kaplan 2007). We have selected the Hadza as an appropriate model simply for the purposes of illustrating our methodological approach, although the ratio of subadults to adults ($_{15}P_5$ ratio) was more similar to Worthy Park than the Swedish sample. Moreover, as discussed previously, there is good evidence that the Hadza profile represents a 'typical' demographic profile for pre-modern societies, somewhat obviating the need to select between demographic models.

Clearly, mapping two or more seriated archaeological samples on a particular known ethnographically derived mortality distribution will produce identically shaped mortality profiles. However, we are not concerned here

with comparing and contrasting mortality profiles (something Bayesian approaches are designed to facilitate) and, indeed, cannot do so with this particular methodological approach. The chief purpose of this method is to disaggregate those individuals traditionally lumped into the catch-all category of 45+ or 50+ years. Indeed, we wish to isolate individuals of advanced age (those in their 60s, 70s, 80s or older) who cannot be effectively aged using conventional methods. Once identified, or rendered bioarchaeologically visible, one is then free to explore a range of social, cultural and biological aspects of ageing.

Conclusions

The difficulties of estimating the age at death of older individuals have contributed to the unrealistic impression that no one lived to a grand old age in the distant past. High childhood mortality, taphonomic issues, inappropriate reference populations, the age brackets themselves, 'attraction to the middle' and the inbuilt inaccuracies of age estimation techniques, especially in the older age categories, have all contributed to the invisibility of older individuals in the archaeological record.

The purpose of this paper has been to provide an alternative method for disaggregating those individuals in an archaeological assemblage that end up populating the final age class in a mortuary profile, the 45+ and 50+ cases. Assuming a modal age of death of around 70 years in both past and recent populations and given that there will be those that lived into their 80s, if not older, in antiquity, our failure to identify these individuals has stifled efforts to establish a bioarchaeology of the elderly.

Our methodological approach makes two major assumptions, the first being that there is a positive correlation between increasing levels of tooth wear and increasing age. Considerable support in the literature for the value of tooth wear in exploring age at death provides a reasonable basis for the use of scoring tooth wear in order to seriate archaeological samples from youngest to oldest. Calibration of this relative seriation using independent age-at-death indicators can be employed, albeit with a less useful effect on older individuals. The second assumption that ethnographically or historically derived pre-industrial mortality profiles (based on actual age-at-death determinations, rather than demographic modelling) are for the most part quite similar in shape, when not subject to elevated risks of death from violence or infectious disease, also appears to be robust. The similarity in a range of mortality profiles, from foragers to 18th-century agriculturalists, suggests they can be used to model seriated archaeological samples for the purpose of identifying individuals in their 50s, 60, 70s and even 80s.

The bioarchaeology of the elderly is perhaps one of the least explored sub-disciplines of biological anthropology and mortuary archaeology. It is not through a lack of interest in the biology and sociology of age-at-death estimation in the past but rather through a dearth of appropriate and testable methods for identifying the aged in cemetery samples that has stalled research in this area. It is clear that an increasing amount of work is progressing our ability to see the elderly, with Bayesian approaches receiving the most attention lately. It is hoped that our take on this problem will contribute to the developing research interest into those that lived to a ripe old age in antiquity.

Acknowledgements

Thank you to the Duckworth Laboratory, Cambridge, and staff for access to the Worthy Park material and laboratory space in which to examine it.

This paper was made possible, in part, by an Australian Research Council grant: FT 120100299.

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APPENDIX 3 SEX AND THE ELDERLY

Sex and the elderly: Attitudes to long-lived women and men in early Anglo-Saxon England. *Journal of Anthropological Archaeology,* 48: 207-216. *doi:* 10.1016/j.jaa.2017.08.003

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CAVE CM and OXENHAM MF

Current Status:

Published September 2017

Journal of Anthropological Archaeology 48 (2017) 207–216

Contents lists available at ScienceDirect

Journal of Anthropological Archaeology

journal homepage: www.elsevier.com/locate/jaa

Sex and the elderly: Attitudes to long-lived women and men in early Anglo-Saxon England☆

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ARTICLE INFO

Keywords:
Age at death
Life expectancy
Gender
Cemeteries
Ageing
Mortuary analysis

ABSTRACT

Currently, in the industrialised world, women have a higher life expectancy than men, a pattern often seen in the past as well. However, in Britain, from the Neolithic to medieval period, it has been suggested that men outlived women. One issue with such statistics is that age estimation techniques are often biased, underestimating the age of older individuals, while the oldest individuals in a sample often disappear into catch-all categories such as 50+ years. Here we employ an approach that renders visible the older individuals in three archaeological cemeteries (Great Chesterford; Mill Hill; Worthy Park) to assess gendered longevity and differential mortuary treatment of the elderly in Anglo-Saxon England. We find that women tended to outlive men and while some elderly females were respected in death, others were more likely to receive a non-normative burial than males. Old males tended to receive 'elaborate' burial, and were less likely to receive a deviant burial. It appears that ageing in Anglo-Saxon England was a gendered process, with some older women respected like their male counterparts, while others were possibly perceived less auspiciously.

1. Introduction

People wear out: with increasing age, physiological function decreases while probability of death increases; these senescent changes eventually cause systemic collapse and a life ends (Ricklefs, 2008: 379). Although current day life expectancy at birth varies from 46 years in Sierra Leone to 84 years in Japan (World Health Organisation, 2015), the human species has an evolved characteristic life span of about seven decades (Gurven and Kaplan, 2007). Actual differential life expectancies at birth are more likely to reflect extrinsic than intrinsic mortality factors; although there are differences in mortality rates between populations and over time, differences in age of senescence have been found to be small (Gurven and Kaplan, 2007).

Nonetheless, life expectancy for males and females tends to differ. In the modern Industrialised world, women have a higher average age at death than men. For example, in Australia 2010–12, men had a life expectancy at birth of 79.9 years (up from 47.2 in 1881–90) while women could expect to live 84.3 years after birth (up from 50.9 years in 1881–90) (Australian Bureau of Statistics, 2014). This trend continues in countries with very low overall life expectancies; for instance, in Sierra Leone women have a greater life expectancy at birth of 46.2 years to men's 45.8 years (World Health Organisation, 2015). This is not only a modern phenomenon: in Sweden 1751, males had a life expectancy at birth of 36.8 years, against 39.9 years for females (Sundbärg, 1906). In addition, the gap between male and female life expectancy has widened as general life expectancy has increased (Colchero et al., 2016).

There appear to be exceptions, at least to some extent. For instance, in rural India 1957–8, men had a life expectancy at birth of 26.9 years while their female counterparts could expect only 26.6 years (Kumar De and Kumar Som, 1964). Nonetheless, although the gap between male and female life expectancy widens to peak at 2.8 years at age ten, after that point it declines; at age 50 rural Indian women have a greater life expectancy than men, an advantage which they maintain for the rest of their lives (Kumar De and Kumar Som, 1964). This pattern possibly reflects not only the dangers of pregnancy and childbirth but also a culture preferencing male children; when those hazards are survived, women begin to live longer than men.

This pattern may also suggest that higher age at death for women is part of the human condition. This is supported by studies in the biological sciences, where it is noted that in primates in general, female survival advantage is ubiquitous and persistent throughout life, especially in humans; this is despite females suffering greater morbidity and physical limitations than males, particularly late in life (Austad and Fischer, 2016; Colchero et al., 2016).

In contrast, in the distant past expectations are often otherwise. In

☆ This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.
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http://dx.doi.org/10.1016/j.jaa.2017.08.003
Received 11 April 2017; Received in revised form 20 August 2017

his report on the human remains at the Anglo-Saxon cemetery of Great Chesterford, Waldron (1994: 52–53) states:

> The cumulative percentage distribution for males and females of known sex shows that the men in the population tended to outlive the women, for whereas only 14.3% of the women survived beyond the age of 45, 26.7% of the men did so. The tendency for males to outlive females in the past has been noted by other authors (see Brothwell (1972), for example), and it is only comparatively recently that the converse has been the case, almost certainly as a result of improved obstetric care.

One of the major problems in these types of analyses is the low, catch-all highest age at death category. An age category of 45+ years encompasses all individuals ranging from fit and energetic athletic types who have just passed middle age, up to the physically and presumably psychologically frail. Such highest age categories also mask the transition from the period where a woman is at risk from the negative effects of pregnancy to the relative safety of menopause. Although categories like 45+ years do not deny the existence of the very old, they render them invisible (see Cave and Oxenham, 2016). Other factors also conspire to disguise the elderly in archaeological samples: taphonomic processes, which are further considered below, methodological practices, inappropriate reference populations or poor correlation of certain traits with age at death (Boddington, 1987; Cave and Oxenham, 2016; Gowland, 2007). In addition, known biases affect the age at death estimations of the elderly, tending to underage them (e.g. Molleson et al., 1993: 167).

Taphonomic processes have long been considered to affect, and thus bias, preservation of archaeological skeletal remains in several ways. Weiss (1972) notes that skeletal collections are usually found to contain more males than females. While noting that differential burial practices, unrepresentative cemeteries, or poor preservation of more gracile female skeletons could be responsible, he suggests biases in sexing methods are most likely to blame. While sexing methods have improved since the early seventies, Walker et al. (1988: 186–7) find males still overrepresented in archaeological sites, and also suggest that the comparatively rapid breakdown of more gracile female skeletons, especially those of postmenopausal females, may be the cause. To test this hypothesis, they examined age and sex biases in the preservation of human remains by comparing skeletal remains with burial records from two Californian sites from differing time periods; they found that age, rather than sex, was the major cause of this bias (Walker et al., 1988: 184–186). This potentially means that the remains of both infants and the elderly are most likely to be poorly represented in demographic profiles (Walker et al., 1988: 187). With regards to sex, they found sex ratios between burial records and the skeletal data were comparable, and sex differences in fragmentation were not demonstrated, despite low numbers of surviving bones; they concluded that sex biases were not likely to be a significant cause of missing females (Walker et al., 1988: 18).

Walker (1995: 35) further addressed this issue using skeletal material from St Bride's Church in London; this time finding that preservation differences, while small, can be large enough to affect mortality profiles. The pubic bone is one of the most reliable for the interpretation of both age and sex, but its preservation is problematic; without this element many skeletons are categorised as being of undetermined sex (Walker, 1995: 35). Walker found that for individuals with a documented age over 44 years, poorly preserved pubic bones in females significantly outnumbered those in males, causing older women to be underrepresented in skeletal collections (Walker, 1995: 35–6). Walker also adds that post-menopausal females tend to exhibit male cranial features, which, when combined with the higher possibility of a decomposed pubic bone, further biases sex ratios (Walker, 1995: 36).

Whether a community held larger numbers of very old men or women will influence the perceptions of age in that community, especially if one sex experiences greater ill health. Great age is easily perceived in the body, through wrinkled skin, grey hair, difficulties in movement and memory, and these changes, today at least, are considered to be unsightly, inconvenient and even abhorrent (Gowland, 2007: 154). Furthermore, it appears likely that greater ill-health (a concomitant of the ageing process) is likely to amplify negative perceptions. While the modern world tends to venerate youth and beauty, greater respect and notice is afforded older males in distinction to older females. This is amply demonstrated in a study of film dialogue: men's dialogue (and by extension, roles) continues to increase until they are 65, while women's work peaks between 22 and 31 years of age (Anderson and Daniels, 2016). Moreover, this is despite, or possibly related to, women's greater survivorship.

With modern data (including evidence from the poorest of the poor) suggesting otherwise, can the view that ancient men survived their women be justified? Before this can be explored, the elderly need to be made visible. This paper aims to examine the age at death profiles from three early Anglo-Saxon cemeteries to determine whether life expectancy for females was greater than that for males, or vice versa. Secondly, we will explore the lived experience of these oldest Anglo-Saxons through mortuary analysis, to discover how elderly Anglo-Saxon men and women were perceived and treated; we seek to determine whether older men and women were conceptualised similarly or differently, and whether their social standing in the community was one of respect, indifference or antipathy.

Like many archaeological studies, examination of the concept of age during this period in south-east England has been limited by the difficulties of identifying extreme age from skeletal material. Nonetheless, Crawford (2007) has explored perceptions of old age, largely through literary sources given the limitations of skeletal ageing. Literary sources for this period are also problematic, as they almost all come from the later Christian period. Crawford (2007: 86) convincingly argues that they provide the closest parallels to the earlier period, but this is a time where many aspects of life and culture have changed and we cannot be certain that attitudes to the elderly were not among them. Our approach provides direct evidence from hitherto invisible elderly individuals now identified within cemetery contexts to illuminate aspects of their life and death.

2. Materials and methods

Longevity in Anglo-Saxon England and elsewhere

Waldron's (1994) assertion (see above) that Anglo-Saxon men outlived women is not without precedent. As Waldron notes, Brothwell (1972) also presents evidence to support this contention, and these data are included in Table 1. While Brothwell's section of Table 1 is somewhat eclectic, in that a range of categories from settlements, to periods, to types of grave good inclusions is listed, it does demonstrate that in all but one instance (Bronze Age burials lacking ceramics) the mean age at death of males exceeds that of females. In addition to Brothwell's data, we have added two Anglo-Saxon cohorts, a multi-cemetery dataset (Stoodley, 1999: 235) where male mean age at death is higher than females; and the cemetery of Worthy Park, Kingsworthy, Hampshire (Wells et al., 2003), where women appear to survive longer than males. Both of these cohorts include only sexed individuals, which largely removes subadults from the calculations, whereas Brothwell's data includes only individuals aged over 19 years. Hines (2002: 99) also presents data from Anglo-Saxon cemeteries listing the proportion of males and females in various age categories. Summing all samples indicates 22.7% of males occurred in the oldest age category (45+ years), in comparison to 18.7% of females (Hines, 2002: 99). However, a greater proportion of females occupy the oldest age category in 4/9 of these same cemetery samples (Hines, 2002: 99). It would seem that females are not always underrepresented in the oldest age categories or have a lower mean age at death in Anglo-Saxon samples.

Table 1
Average life span for males and females during various British Cultural periods (after Brothwell (1972); plus data from Stoodley (1999) and Wells et al. (2003)).

Group	Type	Males	Sample size	Females	Sample size
Neolithic	Chambered tombs	29.8	48	28.1	18
	Unchambered tombs	33.7	37	28.7	10
	All burials	*31.5*	*85*	*28.3*	*28*
English Bronze Age	Burials with beakers	30.9	46	26.6	9
	Burials with food vessels	31.9	17	26.6	16
	Burials without ceramics	31.1	66	**32.1**	30
	Other burials (uncertains)	31.6	71	30.9	17
	Total	*31.3*	*200*	*29.9*	*72*
Iron Age	S English IA	31.9	24	29.9	26
	Yorkshire IA	31.0	41	29.9	22
	Total IA	31.3	65	29.9	48
	Romano Britons	34.8	120	31.9	53
	Dark Ages (Cannington)	33.7	70	31.3	83
Saxons	Town (Winchester)	36.0	74	29.9	50
	Country (General)	34.7	110	33.1	55
Medieval	Town (Winchester)	35.3	126	30.1	81
	Country (Wharram Percy)	35.3	57	31.3	19
Anglo-Saxon	Early Anglo-Saxon dataset[a]	32.7	362	30.26	268
Anglo-Saxon	Worthy Park, Kingsworthy, Hampshire[b]	36.4	30	**38.0**	31

Numbers in bold indicate cases where female average age at death higher than male
[a] Stoodley (1999: 235).
[b] Wells et al. (2003: 153).

2.1. The cemeteries and the graves

Individuals from three pagan Anglo-Saxon cemeteries have been re-aged using the method of Cave and Oxenham (2016) and their full modelled age profiles are illustrated in Table 2. The first of these is Great Chesterford, Essex, excavated by Evison (1994) in 1953–54; 31 Great Chesterford individuals were re-aged into 'elderly' age categories from 45–55 years to 75+ years. The second cemetery, Mill Hill, Deal, Kent was excavated in 1986–89 by the Dover Archaeological Group, with a report published by Parfitt and Brugmann (1997). Here, 19 individuals were re-aged into the categories mentioned above. The final cemetery, Worthy Park, Kingsworthy, Hampshire, was excavated in 1961–2 and published by Hawkes and Grainger (2003). This cemetery was used as a case study by Cave and Oxenham (2016) to demonstrate the method of re-ageing, with 27 individuals placed in the older age categories. These three cemeteries, although somewhat scattered, share similarities which make them suitable for this analysis. All three were largely used in the sixth century, although there are some graves of late fifth and early seventh century dates. Both Worthy Park and Great Chesterford are mixed rite cemeteries, including cremations among the inhumations (it should be noted cremations are not included in this analysis as neither age nor sex of cremations can be determined with any accuracy). Mill Hill and Worthy Park can both be considered to include some Final Phase burials, although Mill Hill's dates are closer to those of Great Chesterford. The three provide a broad range of burials across the geographical and cultural spectrum of interest.

Table 2
Combined Re-Aged Dataset used in all analyses (n = 174).

Age in years		18–29	30–44	45–54	55–64	65–74	75+	Total
Females	Great Chesterford	12	11	11	5	2	1	42
	Mill Hill	5	5	1	3	2	1	17
	Worthy Park	4	8	4	6	6	5	33
Males	Great Chesterford	7	11	6	5	3	0	32
	Mill Hill	5	4	6	3	1	0	19
	Worthy Park	9	7	7	4	2	2	31
		42	46	35	26	16	9	174

While the method is detailed in Cave and Oxenham (2016), it should be noted that Worthy Park was modelled on a population of Hadza, African hunter gatherers (Blurton Jones et al., 2002). Regarding Mill Hill, Deal, due to the high proportion of young adults in this cemetery, only those above 25 years were modelled on a population from rural India, 1957–8 (Kumar De and Kumar Som, 1964). Great Chesterford was also found to be similar to this rural Indian model (Kumar De and Kumar Som, 1964), although all adults above 18 years were modelled. In applying Cave and Oxenham's (2016) method, the differential survival, or otherwise, of subadult remains has no effect on the choice of fitted model, as the model is chosen based on the shape of the adult population; it is important to select models that fit the adult mortality profiles, regardless of differential preservation and/or recovery of the adult remains. While differential tooth wear by sex may have occurred (and isotopically similar diets suggest a common diet for males and females), there is no evidence for this. As there is no clear evidence for a sexual division in dietary habits, dental wear seriation was carried out on combined male and female samples for each assemblage.

To provide as large a dataset as possible, our analysis also includes individuals who were not able to be re-aged, either because they had no scorable teeth for seriation purposes, or because they were not available for study. These individuals were placed in categories defined by their original ageing. Those with open-ended age categories were placed in the category immediately above the specified age. For example, a burial aged at 45+ years is put into the 45–54 age category. If an individual appeared to have lost at least half their teeth, they were deemed to be at least 50–60 years old (as suggested by Mays, 1998: 62), and treated accordingly. As perceptions of sex and age are the key aspects being studied, only sexed and aged individuals (whether aged in the original reports or aged in the re-ageing process) were included in the mortuary analysis. In this way, a dataset of 174 individuals was created, with 92 females and 82 males (Table 2).

2.2. The lives of older Anglo-Saxon women and men

Once the re-ageing was completed, the results were used to examine perceptions of age through a mortuary analysis. Statistical analysis by age and sex is difficult due to small sample sizes. While, where appropriate, we undertake some statistical testing (χ^2), for the most part we qualitatively examine aspects of burial practice to determine trends suggesting differential treatment of older men and women.

The identification of normative and non-normative burial is one approach to assessing differential mortuary practices. 'Normative burial rites provide benchmarks against which deviant status may be determined' (Reynolds, 2009: 35). As such, non-normative burial is here defined as a grave having characteristics of burial practice which differed from most other burials; it includes burial in a reverse orientation, careless burial (including graves too small or shallow for the individual), the scattering of rubble over the burial and prone burial. Reverse orientation is defined as a burial where the head is facing the opposite way to most other burials – for example, where burial is commonly west-east with head to the west, reverse orientation is east-west with head to the east; Evison (1988: 41) suggests that reverse orientations were given to those not regarded as full members of society

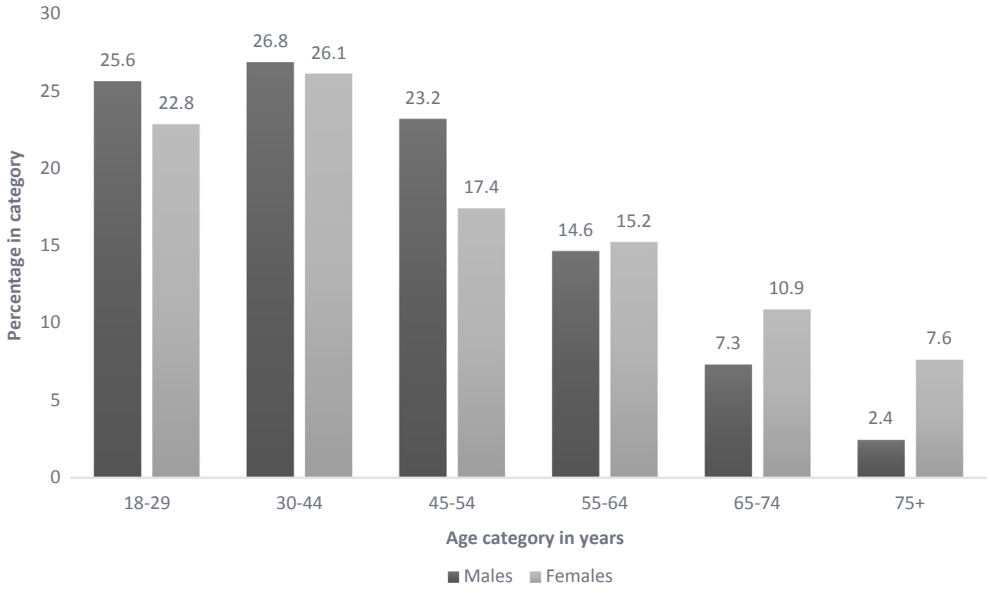

Fig. 1. Age at death comparison male and female adults for Great Chesterford, Mill Hill and Worthy Park combined.

like non-adults, those from elsewhere or slaves. Non-normative burial is often interpreted as denoting displeasure, fear or even punishment (Reynolds, 2009), but may also relate to post-burial manipulations, parallel practice, graves considered special or merely a non-typical burial for unknown reasons (Aspock, 2015; Hofman, 2015).

This study is concerned with non-perishable grave goods. While it is likely perishable grave goods (such as plant, fabric and food items) may have been placed in graves, the lack of evidence for such items means they must essentially remain invisible to this analysis. Social identity and status in a society such as this with few written texts are largely inferred through archaeological evidence, especially burials and grave inclusions (Scull, 2011). Although imperfect, here we accept that placement of grave-goods and the burial context are an expression of the deceased's and/or the deceased's family identity and thus an indication of societal stratigraphy and power relations (Halsall, 1996; Scull, 2011).

Defining high status is a matter of judgment; quality does not equal quantity, and it is difficult to determine the status or meaning a particular object had to people in the past. When Stoodley (1999: 91) considered status, he examined the number of grave goods and grave good types, the quality of the item as well as the presence of precious materials. Although precious metals or stones may be considered to be high status due to rarity and beauty, Stoodley (1999: 92) notes that in his database, 82% of such objects were found in female graves; this may suggest that women had a higher status than men, or alternatively, that such items were feminine artefacts. Although such findings may suggest that women were sometimes seen to be buried in 'richer' graves than men, with a greater quantity of goods, a greater variety and more precious or rare materials (for example, Härke, 1997: 134), it is debatable as to whether this is indicative of higher status. Other aspects are also important, like the quality of textiles in the wearer's clothes, gifts of food and drink represented by the surviving containers, coffins or other specialised grave construction, as well as the effort needed to dig the grave, evidenced by size and depth (Williams, 2011: 253). As such, we do not directly compare masculine and feminine grave goods, but instead compare high status graves for each sex and age category.

When considering high status female goods, differences in female 'fashions' were noted in the three cemeteries under review, so the definition of which burials could be defined as 'very high status' varied in each. The corpus of female goods in each cemetery was closely examined and a judgment made as to the highest status burials for each. At Great Chesterford, women received no silver items, so more than one gilt or tinned brooch was required, and at least one other significant item before being identified as high status (Evison, 1994). Two individuals had bronze brooches only, but these were included because of exceptional other items – in the case of burial 9, a decorated bronze bound wooden bucket, and for burial 18, wrist clasps, a pin, keys, an ivory ring, decorated bronze strap ends and a buckle (Evison, 1994). Nine out of 42 female aged burials (21.4%) were included in this group. At Mill Hill, women were buried with up to six brooches, and precious materials were plentiful; as such, burial with at least four brooches was required to be included in the highest status category, along with at least one silver item; five out of 21 burials (29.5%) were thus included in the category (Parfitt and Brugmann, 1997). At Worthy Park, tinned, gilt or enamelled brooches warranted inclusion as did silver rings, or a coffin. Seven of 33 burials (21.2%) fitted this prescription (Hawkes and Grainger, 2003). Overall, 23.8% of the sexed aged females received very high status burials.

The determination of male high status burials was a simpler matter as the range of goods interred was similar across the three cemeteries. As there were too few of the highest status goods – swords or seaxes – in the dataset, those with decorated spearheads, glass beakers, silver or gilt items, and unusual items, like shears, were also included in addition to swords or seaxes. This type of burial was accorded to 22.0% of the sexed male dataset. The percentage of individuals with very high status goods is similar for males and females, allowing the distribution of these goods throughout the age categories to be illustrative.

We also examined the distribution of grooming items, as it was a category that has showed significant differences between age classes (Cave and Oxenham, in preparation); older individuals were buried with them significantly more often than younger individuals. Grooming items include tweezers, combs, toilet sets, metal tubes interpreted as brush holders and razors.

3. Results

3.1. Longevity

The average adult age at death for this dataset is 46.3 years for females and 43.1 years for males. As can be seen from Fig. 1, a higher proportion of females than males populate age groups higher than 55 years, while more males died in the younger age categories. The difference is most noticeable in the 75+ age category, which included seven women and only two men. When the three oldest individuals from each cemetery were identified, it was observed that of these nine individuals, seven were female and two were male.

Table 3
Burial data and results of analyses.

Variables ▼	Females						Males						χ^2 results[†]	χ^2 results[†]
Age in years ▶	18–44 (YF)	%	45–64 (MF)	%	65+ (OF)	%	18–44 (YM)	%	45–64 (MM)	%	65+ (OM)	%	Old v Young[*]	Males v Females[*]
Sample size ▶	45		30		17		43		31		8			
Non-normative burial	6	13.3	7	23.3	3	17.7	4	9.3	13	19.4	0	0	–	
High status goods	13	28.9	5	16.7	2	11.8	5	11.6	7	22.6	5	62.6	OM > MM = YM p = 0.005	OM > OF p = 0.031 YF > YM p = 0.045
Grooming items	5	11.1	4	13.3	4	25.5	2	4.7	7	9.7	6	75	OM > MM = YM p < 0.001	OM > OF p = 0.014 MM > MF p = 0.002

MM = middle aged males (45–64 years).
YM = young males (18–44 years).
OF = old females (65+ years).
MF = middle aged females (45–64 years).
YF = young females (18–44 years).
* OM = old males (65+ years).
† Results of χ^2 if $p < 0.05$.

3.2. The lives of older Anglo-Saxon women and men

Although this examination is largely qualitative, where appropriate, statistical tests were run (see Table 3). No significant differences were found in the granting of a non-normative burial. Older men are more likely to receive high status goods than middle-aged or young men; they also received high status goods more often than older women, but young females were more likely to be buried with high status goods than young males. In the case of grooming items, old men received them more often than old females, as did middle-aged men in comparison to middle-aged females.

3.2.1 Non-normative burial

Although not statistically significant, more females received non-normative burial than males in each age category; no male over 65 years (n = 8), received a burial that was considered non-normative. We then examined the types of non-normative burials (Table 4). While a slightly higher proportion of males were buried in a reverse orientation, women lead all other categories. The two females in the 'Other' category included burial 26A, 18–30 years, from Worthy Park who was buried with an infant between her femora, with the infant's legs still within her pelvic area; chalk rubble was piled over the infant; the other was burial 114, aged 75+ years, from Great Chesterford whose remains were dug up and scattered in the fill of a young man's grave. Only women were buried face down, or prone, a form of non-normative burial treatment often seen as having negative connotations (e.g. Meaney, 1981: 249–262, Reynolds, 2009: 73, 90).

3.2.2. Very high status burials

Older men are most likely to receive high status goods. Fig. 2 illustrates the very high status burials of males and females, demonstrating that whereas women receive few high status burials as they age, men receive more.

3.2.3. Grooming items

Although elderly females receive grooming items at twice the rate of their younger contemporaries, elderly males receive grooming items at three times the rate of elderly females. The types of grooming items buried with various age and sex categories can be seen in Table 5.

4. Discussion

4.1. Male and female longevity

The ability to differentiate between the somewhat old and the very old has allowed us to determine that, like most human populations, Anglo-Saxon women tended to live longer lives than men. This is a significant outcome, because many studies (see, for example, Brothwell, 1972; Stoodley, 1999; Waldron, 1994) have suggested otherwise. This finding is supported by biological studies which show that while most well-studied species have sex differences in longevity, humans appear to be the only species where one sex (in this case, female) has a universal survival advantage (Austad and Fischer, 2016: 1022). In fact, as humans have increased their life expectancy, the female advantage has increased (Colchero et al., 2016).

Although supported by such findings, we must consider whether this result is a true artefact of Anglo-Saxon life or whether it is a function of the method of re-ageing. The method, in this instance, is initially based on a seriation of the sample according to relative tooth wear, and while females in general tend to have higher rates of dental caries (Lukacs, 2011; Willis and Oxenham, 2013), isotope studies have shown no dietary differences by sex at Worthy Park (Hull and O'Connell, 2011: 674) or in a sample which included Worthy Park and Mill Hill (Mays and Beavan, 2012: 870). While there are no apparent gender differences in diet, it is still an assumption that male and female diets were similar in terms of coarseness, and that male and female rates of dental attrition were similar.

In many societies, age grades, and thus time, are experienced differently by males and females (Gilchrist, 2000: 325); this study

Table 4
Non-normative burials.

	Reverse	%	Careless	%	Prone	%	Other	%	Total	%
Female	3	3.26	9	9.78	2	2.17	2	2.17	16	17.39
Male	4	4.88	6	7.32					10	12.20

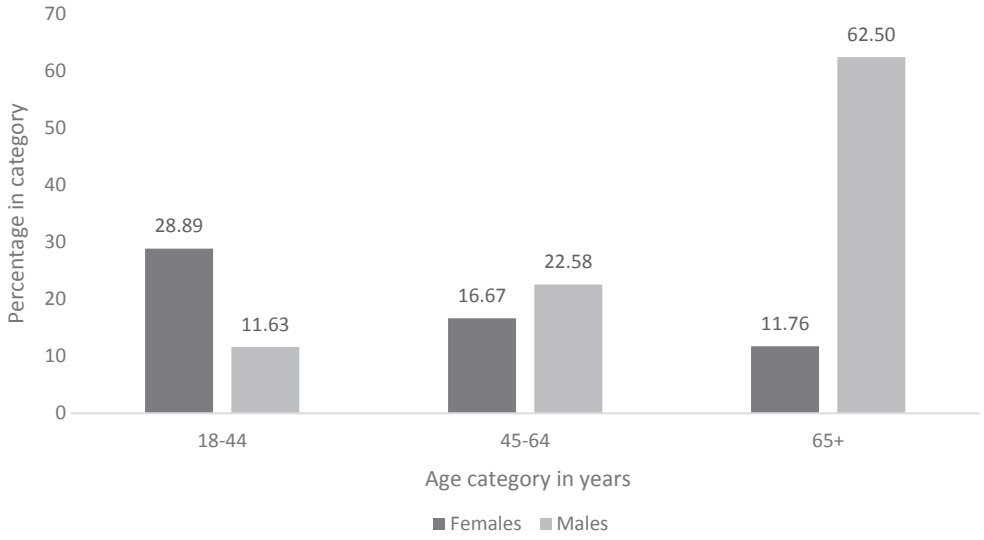

Fig. 2. Percentage of high status goods found with males and females from Great Chesterford, Mill Hill and Worthy Park.

Table 5
Grooming Items.

Age category	Tweezers	Toilet item	Comb	Brush	Total	Number of graves
65+ Females	2	1	1		4	4
65+ Males	5	1			6	6
45–54 Females	2		1	1	4	4
45–54 Males	3				3	2
18–44 Females	0	2	1	2	5	5
18–44 Males	0				0	0
Totals	12	4	3	3	22	21

confirms this, finding that time is not only felt differently, but is in fact differently allocated by sex. Life history theory suggests that humans have an evolved life span, and that senescence occurs at remarkably similar times throughout time and across cultures (Gurven and Kaplan, 2007). Whether extended post-reproductive lifespans are due to the grandmother effect, the necessity of providing long term care for offspring or human sociality (Colchero et al., 2016; Hawkes, 2004; Peccei, 2001), it does not explain why longevity is given to women over men, who can also assist their offspring. Post-reproductive lifespan may simply be a by-product of other factors. Hypotheses include a more active female immune system, hormonal effects and the properties of the female extra X chromosome (Austad, 2006; Dunford et al., 2016).

The prevalence of older women over older men in Anglo-Saxon society may explain any differential treatment. An important consideration in this regard is the increased morbidity that older women are subject to, resulting in greater physical and possibly psychological limitations (Austad and Fischer, 2016; Freedman et al., 2016). Did the observation that there were many more old women surviving to great age, likely also having greater age-related ill-health, influence the social perceptions of a gendered old age? Older women are perceived more negatively than older men in the world today, a world that increasingly side-lines and dismisses the elderly (Kite et al., 2005; Queniart and Charpentier, 2012). The chart comparing high status goods among men and women (Fig. 2) is surprisingly similar to the findings of Anderson and Daniels (2016) in their study on film dialogue: women receive most lines and high status goods before they reach middle age, while men retain and even increase their status well into old age. Does this suggest that these attitudes, of positive views of the ageing male against negative stereotypes for the ageing female, have been with us for millennia?

4.2. The lives of older Anglo-Saxon women and men

4.2.1. Non-normative burial

It is notable that a higher proportion of females received non-normative burial, regardless of burial category. Further, in the oldest age category no males were buried non-normatively. The oldest females were less likely to be given non-normative burial, while Middle-aged females were the most likely to be interred non-normatively. Assuming at least some of these non-normative burial forms have negative connotations, such as those buried prone (see Meaney, 1981: 249–262, Reynolds, 2009: 73, 90), female status arguably increases from Middle-age to Old-age.

Gowland (2015) notes that elder abuse is underreported and underdiagnosed today, with 2–10% of the elderly being abused physically, emotionally and financially. She also notes that today, old age conditions and perceptions are dependent not only on factors of social status, health, disability and wealth, but also gender; this is perhaps highlighted by the fact that all archaeological examples she examined were female (Gowland, 2015: 2, 2016, 76, 81–4. Smith et al. (2016) recognise that a percentage of the ancient elderly must have suffered from dementia, a condition which may increase the likelihood of abuse. While there are no physical symptoms of elder abuse here, the only prone burials (and arguably deviant) in these three cemeteries are female.

Grave 103 at Great Chesterford, was a middle-aged woman (45–54 years) buried face down with her finery deposited in the corner of the grave, probably in a bag. The woman was laid close to the wall of the grave, her right arm underneath her body, with a dark stain occupying the space beside her. This burial possibly belongs to a group suggested by Meaney (1981: 249–262) to be that of 'cunning women', well-furnished graves which include amulets and/or bags of small non-functional items, perhaps for the employment of magic, healing and divination (Reynolds, 2009: 74). Her grave, at 1.22 metres deep, is deeper than the average depth at Great Chesterford (1.04 m). A deep grave may be indicative of a person being worthy of greater effort in digging it, or it could also be interpreted as a means of preventing revenancy (Hohmann, 2004; Tsaliki, 2008) (it should be noted that in considering any grave depth, to take into account different soil matrices, comparisons were made only with other graves in the same cemetery). It seems apparent that this middle-aged woman gained the displeasure of her community, whether it was for being cunning, condemned as a witch, feared for her supposed powers, or other reasons, we cannot say.

The other two prone burials are graves 43 and 78 at Worthy Park. Neither contained grave goods. Hawkes and Wells (1975) suggest that

burial 78, a 13–15 year old individual, was a possible rape victim, evidenced by femoral injuries, who went to her grave with feet and hands bound. Although some of their overreaching inferences are regarded as conflations and wild generalisations (Reynolds, 1988: 715), there is no doubt that a prone burial with bound feet and hands suggests either extreme punishment or the need to restrain the deceased. Grave 43, a 25–30-year-old individual, who may also have been bound, was carelessly placed in a too-short grave. Notwithstanding, both graves were dug 36 cm into the chalk matrix, well within the average range.

Despite both sensible interpretations and wild generalisations, it appears notable that these prone burials are all female. Although a much wider survey is necessary to determine whether this is a global trend, Reynolds (2009: 72) found 115 prone burials in 60 Anglo-Saxon cemeteries: 37 males, 52 females, 17 unsexed adults and nine juveniles. Whether these individuals were buried this way for improprieties related to their biological sex, gender or general perceived misbehaviours is impossible to say. There is clearly a recognisable category of prone females in the early Anglo-Saxon burial corpus and we propose that femaleness, especially female power, as judged by a masculine society, is a possible reason for a dishonourable (including prone) burial (Meaney, 1981: 249–262, Reynolds, 2009: 73, 90). Although no elderly individuals were buried this way in this sample, we consider that this is perhaps symptomatic of the control and judgement imposed on women by men.

4.3. The oldest individuals and their burials

While a simple quantitative analysis on a present/absent basis may suggest little difference between the treatment of younger and older individuals and of males and females, looking a little closer at qualitative aspects of burial practice tells a different story. If we consider the cases of the three oldest individuals from the three cemeteries, not only do we see the greater representation of women in this cohort, but also differences in the relative mortuary treatments of these individuals.

The oldest individual buried at Worthy Park was burial 49 (Hawkes and Grainger, 2003). He was a male interred in a grave with a chalk pillow for his head, supine in a west-east orientation. Beside his head was a gunmetal bound wooden bucket and an iron spearhead, a seax was placed beneath his left arm and a shield covered his pelvis. There can be no doubt that this was a high status burial. Also aged in the 75+ age category, the fourth oldest in the cemetery, is another very high status male, burial 50, interred with a spearhead as well as a decorated iron and copper alloy object, decorated tweezers, a buckle and a knife. These two high status male burials stand in contrast to the two oldest female burials from Worthy Park, second and third in the seriation, who received very different burial treatment.

Burial 42 was the grave of an old woman with a few skull fragments of a subadult beside her (Hawkes and Grainger, 2003). Her body was close up against the side of the grave, presumably to make room for the unaged child. Although she was buried in a supine position, her legs were bent to the left because she was placed too near the end of the grave; her only grave good was a single amber bead. Burial 39 fared a little better; she was also buried supine, in a large grave with a decorated tin or tin-lead coated bronze pin on her upper chest, a pair of iron tweezers suspended from an iron ring and an iron knife. These women were accorded furnished burials, but their treatment and status fall somewhat short of that afforded male burials 49 and 50.

The cemetery at Mill Hill tells a similar story (Parfitt and Brugmann, 1997). The three oldest individuals were all women, two of whom had a single brooch (along with other items), the third while lacking a brooch had a strap end and six beads among other commonplace goods. As this was in a cemetery where women were buried with up to six brooches, many of them silver and often with garnets, it can be seen that these three old women had somewhat depauperate graves. The oldest male from Mill Hill, while not receiving a very high status burial (as determined by our definition above), was buried with a spearhead and tweezers, again suggesting preferential treatment for old men, although the gap is not perhaps as wide as at Worthy Park.

At Great Chesterford, the oldest burial, a woman, received a non-normative burial. Although she was buried with at least two non-matching small long brooches, six beads and a bone pin in a high status section of the cemetery, her remains were dug up and scattered throughout the fill of the grave of a young, very high status man; he was buried with a decorated spearhead, a hone, a purse mount and a decorated strap end with a silver top plate. There are few graves in the cemetery of Great Chesterford intercut by others, and then only to a small extent, so this woman's grave, which was completely excavated, is exceptional. The two burials both come from the same phase of the cemetery, which means that they occurred within fifty years of each other. Even taking into account that fifty years is a long time in human terms, this suggests either that this woman was either not important enough to remember, even though she lived to an older age than anyone else in the community, or if remembered, she was not considered worthy of respect in the replacement of her remains. If she was dug up accidentally, her bones could have been replaced neatly in a corner, or reburied elsewhere; instead, they were scattered carelessly throughout the fill. However you look at it, this is a woman accorded neither respect nor high status.

The second oldest in the Great Chesterford cemetery, burial 112, also female, was buried crouched on her side with a bronze pin, an iron ring, and a key fragment in a nondescript part of the cemetery. Although this burial has not been recorded as 'non-normative' (see Reynolds, 2009: 63–64 for a discussion of crouched burials), she is the only adult buried in such a tightly crouched position in the cemetery; her grave is half the size of most adult graves. This grave stands in contrast to the third oldest individual, from grave 140, a weaponed-male, buried in a large grave surrounded by children, with a decorated spearhead, an inlaid buckle, tweezers and a purse mount. Stones line one side of the grave, and there is also a stone at his head.

Our results suggest that while women tended to live longer in the communities represented here, their status was noticeably less than that of the oldest men. One possible reason is that for as long as statistical data has been available, men have higher mortality rates, but women greater morbidity, meaning that even though they live longer, their quality of life and general health is much poorer (Freedman and Spillman, 2014; Verbrugge, 1985: 156–157). Despite longer lives, their number of active years is no greater than those of men (Freedman et al., 2016: e5) and this may have affected their perception by others. Were these older women disabled, disgruntled and/or ill-favoured? Was the apparent distaste for elderly females a function of reduced community engagement? Had they exhausted their social capital within their respective communities? Did the myriad physical manifestations of ageing single them out for ill treatment? It is perhaps relevant that the various physical manifestations of ageing in females (but not males) inform the popular culture image of the witch (Briggs, 1996; Seso, 2012).

Is this explanation, while possibly providing some clue to the treatment of elderly women, enough to explain the lack of high status female burials? The only female in the 75+ age category to receive a very high status burial was buried in grave 77 at Worthy Park (Hawkes and Grainger, 2003). She was buried supine with a tinned copper alloy quoit brooch worn on her left shoulder, a necklace of beads and a pendant, a decorated copper alloy belt or purse fitting plus other objects. There was another possible brooch, broken and unworn, in a group with other objects, perhaps in a bag. The evidence provided by this woman suggests that not all women were regarded relatively negatively or neutrally, and that some attained or retained high status in their old age.

Although a woman is a social actor in her own right and able to negotiate her own space in society, her position is ultimately limited by the demands of her society; in a society such as this a woman's place was defined by men (Halsall, 1996: 19). Anglo-Saxon men were buried

with symbols of martial power, such as weaponry, while women received symbols of beauty in dress accessories; beauty, for both men and women declines with age, but only in women is this the key identity displayed in the burial ritual. Ageing entangles women within culture-specific conceptions of femininity requiring youth and consequently beauty (Perrig-Chiello 2001 cited in Queniart and Charpentier, 2012: 987). The contrast between male and female, youth and elderly in beauty is highlighted by older males outperforming older females, and all those younger, in the placement of grooming items.

Many studies have examined feminine dress accessories and their roles in constituting identity and communicating messages about the wearer in death and life (e.g. Martin, 2011; Suzuki, 2000) and these aspects of brooch wear are not denied; however, brooches and other feminine dress accessories like beads and necklaces, pendants, pins, wrist clasps etc are all items which are also employed in highlighting and/or enhancing beauty. Today, beauty is still considered a major aspect of feminine identity (see discussion in Lazar, 2011), and these items suggest that this was also so in this period.

Women being buried with fewer dress accessories perhaps reflects a loss of perceived beauty, but also its transfer to the next generation; this is most evident at Mill Hill, where young women received up to six highly decorative brooches, whereas the two oldest women received one each, and one of these was unwearable (Parfitt and Brugmann, 1997). Although by the time these women died, fashions had changed and a single brooch had become the norm, the Mill Hill evidence suggests that these two women may have owned multiple brooches when young. This pattern is suggestive of the passing on of brooches and other dress accessories, possibly to daughters or daughters in law; alternatively, these daughters and daughters in law made sure their elders were buried in the latest fashions.

Giving away one's brooches is contrary to the thesis of Martin (2012) who examines the repair, customisation and re-use of Anglo-Saxon brooches, and contends that brooches were the inalienable possession of the owner and must therefore be repaired when broken and not passed on to someone else on death. Although there may be justice in this conclusion, it does not take into account the numbers of brooches buried with individuals peaking during young adulthood, then declining with age, a pattern evident here. Martin (2012) does not discuss unusable brooches found in purses or bags in graves, such as that from Grave 95 at Mill Hill (Parfitt and Brugmann, 1997); the fact that these brooches were kept, even if not on display, suggests that they retained importance to the individual who owned them, at least in the eyes of those who buried them.

When interpreting burial assemblages in terms of social identity, it should be remembered that as people get older, not only does their identity alter, but so too does that of the principal mourners (Gowland, 2006; Sayer, 2010). A child may be buried by their parents, but the elderly are buried by their children and grandchildren. In a study which included Mill Hill, Deal Sayer (2010) uses high status burials to indicate possible heads of household, suggesting that the right to a particular furnished burial was transmitted to one person or a pair of people in a given generation or unit of social time. The social identity – of household head or slave, warrior or beauty– in the grave thus refers not to a person's own self-perception but is representative of the group perception (Williams and Sayer, 2009: 1). These moving, shifting identities may have been initially created by the individual weapon bearer or brooch wearer and their interaction with society, but the final graveside expression comes from the societal groups that envelop the individual from birth onwards (Williams and Sayer, 2009). They are not static but rooted in actions of individuals and groups; material culture is central in the 'creation, negotiation, transmission and performance' of social identity (Williams and Sayer, 2009: 2), and in a burial this creation, negotiation and transmission is in the burial tableau.

Härke (1990) clearly outed weapon burial as a symbolic artefact rather than a true signifier of the grave of a warrior. He found no correlation between weapons in graves and historical evidence for war, and no correlation between the ability to fight and the presence of the tools of fighting (Härke, 1990: 28–33). Stoodley's (2000) finding that the majority of weapon burials are for those 20–25 years, with 41% of males in this group buried with a weapon, is somewhat contrary to Härke's thesis; however, Stoodley's oldest age category is 40+ years. Our study, with the advantage of extended age categories, finds that 100% of males over 75 years and 63% of males over 65 years were buried with weapons, suggesting a symbolic role. Although the idea that there is a loss of beauty with increasing age is seen in the modern industrialised world, the same cannot necessarily be assumed for the past cultures. Notwithstanding this, males keeping and even increasing their martial symbolism is in contrast to feminine burials where the symbolism of beauty is present among the young and beautiful but absent from the aged "beauty-free" body, suggesting that reality is expressed by the symbolism.

5. Conclusions

In Anglo-Saxon burials, biological sex, gender, age and status are frequently seen to be linked and their expression largely discussed by archaeologists in mortuary contexts (Lucy, 2011). The resulting assumption is that these expressions are also evident during life: a funeral is a deliberate act and a grave assemblage is put together by mourners who may want to emphasise some aspects of the deceased's life and play down other facets. Earlier work in this area, especially by Crawford (2007) and Stoodley (1999, 2000), has been hampered by the difficulties of ageing older individuals; the ability to identify the invisible elderly has allowed us to more clearly identify the treatment of the elderly in death.

We have argued that, similar to today, women in general lived longer than men in Anglo-Saxon times. We have also shown that, despite or because they lived longer, older women on the whole were shown less respect in death than their male counterparts. While only one of the seven women aged over 75 years received a high status burial, both of the oldest men did. In addition, whereas old women generally received fewer items in their grave than younger women, especially with regard to high status goods, men generally received more.

Although older females and males were equally likely to receive a non-normative burial, older men received the lesser forms of non-normative burials and only women were buried prone; one very old woman was completely dug up and her bones scattered throughout the fill of a young man. Conditions which generally might result in a lesser burial, like a bad death, servitude or slavery could equally apply to both men and women, suggesting that the feminine gendered individual was more likely to have acquired the status requiring a non-normative burial.

The lack of high status grave goods and the greater likelihood of receiving the most noticeable forms of non-normative burial suggest that old men and women were perceived very differently in Anglo-Saxon times. It appears that ageing in Anglo-Saxon England was a gendered process, with fewer older women as respected as their male counterparts.

Acknowledgements

Thanks to the Duckworth Laboratory, Cambridge and to the University of Southampton for access to the Worthy Park and Great Chesterford skeletal material and the lab space in which to examine it. Also to the Dover Museum for access to the Mill Hill material, space to examine it and to Geoff Halliwell for assisting me with that investigation. This research is supported by an Australian Government Research Training Program (RTP) Scholarship.

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APPENDIX 4: the cemeteries and their inhabitants

GREAT CHESTERFORD AGEING

Table 8n 1 Ageing at Great Chesterford: original ages by Waldron 1994; re-ageing by Cave & Oxenham 2016; * indicates burial not re-aged

Female burials	Male burials	Unsexed burials	Waldron Age	Re-ageing
114			45+	75+
112	140, 54		45+	65-74
14	125		35-45	
	25B		Unaged	
113, 135	51		45+	55-64
10, 116, 152	80, 90, 157		35-45	
	137	62	Adult	
26*, 27	68, 75, 101		45+	45-54
1, 24, 81, 103, 120, 124, 132, 160	76		35-45	
127	102, 122		25-35	
	84, 109		45+	30-44
37*,55*, 92, 108*, 145	5, 8*, 117	13*	35-45	
45, 48*, 66, 73, 97, 126,	2A, 3, 22, 93, 128	12, 41, 142*	25-35	
153,	4		15-25	
		28	Adult	
7,100, 110			25-35	18-29
9, 18, 20, 21*, 23, 32, 40, 129	33, 50,121, 130, 149,		15-25	
	96		15-20	
	115		adult	

Table 8n 2 Ageing at Mill Hill: original ages by Anderson & Andrews 1997; re-ageing by Cave & Oxenham 2016; *indicates burial not re-aged

Female burials	Male burials	Unsexed burials	Anderson and Andrews age	Re-ageing
95	81*		45-55	75+
94	36		40-50	65-74
	101*		45+	
69			40+	
	35		50-60	55-64
10, 100			45-55	
92	93		40-50	
	17		35-45	
	45, 90	86	40-50	45-54
	97*, 105B		35-45	
59	40	82	30-40	
		85B	30-35	
83			40-50	35-44
105C	75		30-40	
	76*		30	
		79	25-35	
25A, 104			30-35	
25B			20-25	
		102	25-35	25-34
	85A	70	20-30	
	80		22-27	
65		71	20-25	
		67	25-30	
38			22-29	Not re-aged
61	89, 57		20-25	
73			18-21	
	22, 34	27B, 64	18-20	
		88	17-20	
		29, 39	15-20	
33			17-19	
106			16-19	
		9, 21, 28, 63, 72, 74, 91, 111	Unaged	Not re-aged

WORTHY PARK

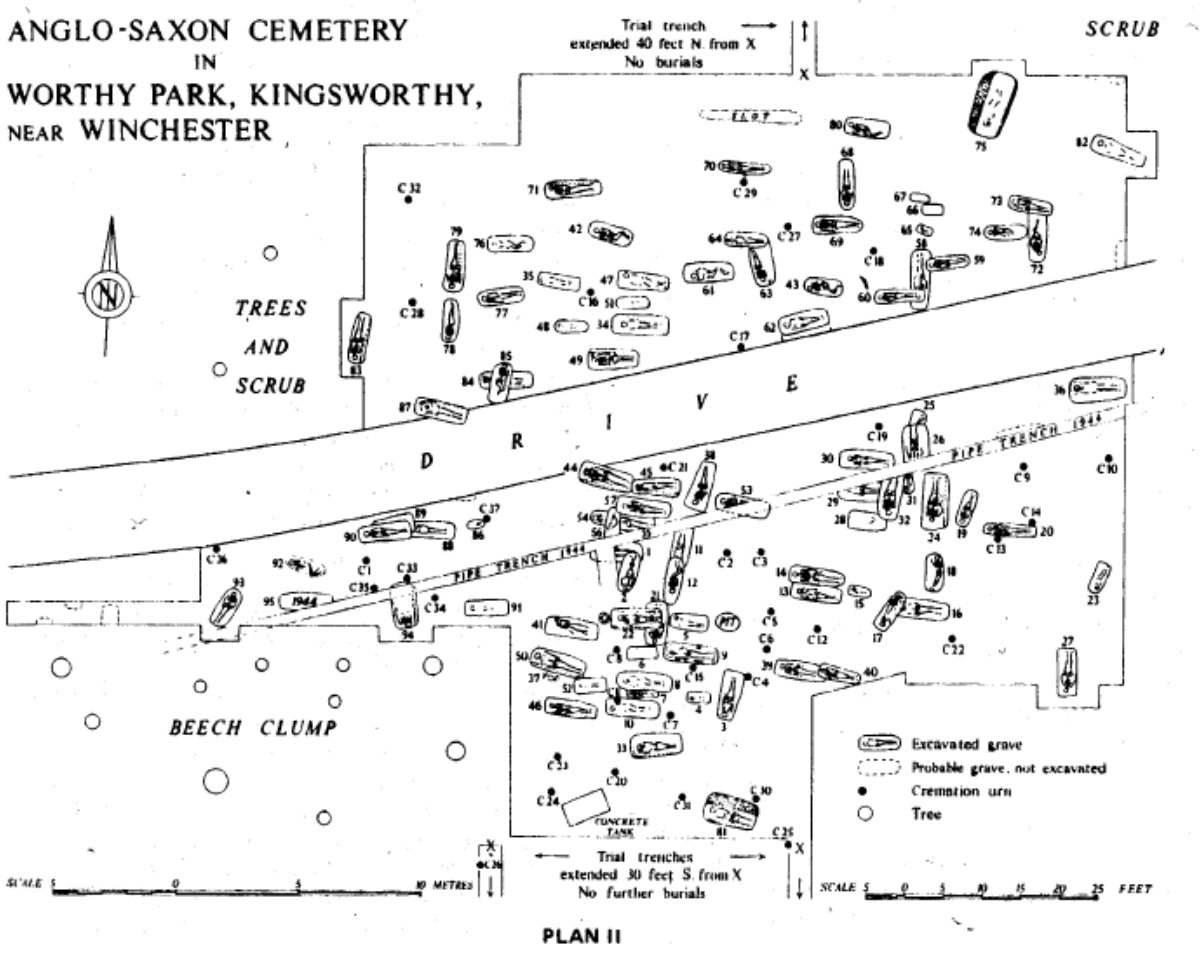

Figure 8-1 Worthy Park cemetery map (Hawkes and Grainger 2003)

Table 8-3 Ageing at Worthy Park; original ages by Wells et al. 2003; re-aging by Cave & Oxenham 2016; * indicates burial not re-aged

Female burials	Male burials	Unsexed	Wells et al. ages	Re-ageing
72			45-55	75-85
	49, 57*		50+	
39, 77	50		40-50	
63			45	
42A			40+	
3, 12, 20	41		50+	65-74
16-Jan	70*		40-50	
11, 30			adult	
36			30-40	
2, 21A*, 58*			50+	55-64
18.3, 55*			40-50	
14	87*, 92*		40+	
9			30+	
93			30+	
	24, 90, 44*, 62*, 73*		35-45	
80			50	45-54
	83		40-50	45-54
	17B, 94A*		30-40	45-54
61	79*		30-35	45-54
64B*	13		30+	45-54
	38		25-35	45-54
	40*		35-40	35-44
85			25-35	
60			24-25	
53			25	
8*, 10, 29*, 47.1*, 56*, 76*, 82*	1*, 25A*	16.2*, 75*	adult	
27, 32			50+	25-34
34			30-40	
43*, 68*			25-30	
	33		30-40	15-24
	22		25-30	15-24
18.1			21-25	15-24
	96*		18-35	
	46*		20-30	
26A	45, 81, 95*		18-30	
	69*		20	15-24
	84		18-20	
		88*	18	
		99*	"young person"	

APPENDIX 5: Conference presentations related to this thesis

2017 Cave CM, Oxenham MF. Poor Old Men: unfurnished male burials in Early Anglo-Saxon England. A paper presented at the 31st Annual *Australasian Society of Human Biology* (ASHB) Conference, Ballarat, Federation University Australia, 3-6 December 2017

2017 Cave CM, Oxenham MF. Faith and Change: tradition and transformation in early Anglo-Saxon beliefs and burial practices. A paper presented at the *AHRC DTP Conference*, Emmanuel College, Cambridge (UK) 18-20 September 2017

2017 Cave CM, Oxenham MF. Identifying the Invisible: a biography of two lives from Anglo-Saxon Great Chesterford, Essex. A poster presented at the 19th *Annual Conference of the British Association for Biological Anthropology and Osteoarchaeology* (BABAO), Liverpool John Moores University (UK) 8-10 September 2017

2016 Cave CM, Oxenham MF. New Country for Old Men: Early Anglo-Saxon men buried on Mill Hill, Deal, Kent and the cemetery they founded. A paper presented at the 30th Annual *Australasian Society of Human Biology* (ASHB) Conference, Dunedin, University of Otago, 6-8 December 2017

2016 Cave CM, Oxenham MF. Senescence in space: 3D relationships of Anglo-Saxon elders. A paper presented at *Australian Early Medieval Association 11: Space and Time in the Medieval World*, 11-12 February 2016, Sydney

2016 Cave, CM, Oxenham MF. Sans Teeth, Sans Eyes, Sans Everything: Were Anglo-Saxons infantilised in their dotage? A paper presented at: *For the Love of Death: Human Osteoarchaeology in Southeast Asia and the Pacific.* Archaeological Studies Program, University of the Philippines, Diliman, 8-9 January 2016.

2015 Cave CM, Oxenham MF. Cardigans, slippers and silver haired winters: Oldest Anglo-Saxons Identified. A paper presented at the *29th* Annual *Australasian Society of Human Biology Conference, Brisbane, 2-4 December 2015.*

2015 Cave CM, Oxenham MF. Out of the Cradle and Into the Grave: the children of Anglo-Saxon Great Chesterford, Essex. A paper presented

at the *21st Annual Meeting of the European Association of Archaeologists*, Glasgow (UK), 2 -5 September 2015.

2014 Cave CM, Oxenham MF. Hangin' with the olds: The older inhabitants of Mill Hill, Deal, Kent. A paper presented at the *28th* Annual *Australasian Society of Human Biology Conference, Adelaide, 10-12 December 2014.*

2013 Cave CM, Oxenham MF. Old and Older: Identifying the Invisible Elderly in an Anglo-Saxon cemetery. A poster presented at the 27 *Annual Australasian Society of Human Biology Conference, Sydney, 9-10 December 2013*

2012 Cave CM, Oxenham MF. New Tricks for Old Dogs: extending the age at death for older individuals in an Anglo-Saxon cemetery. A paper presented at the 26th *Annual Australasian Society of Human Biology Conference,* Vanuatu, 3-5 December 2012

2011 Cave, CM. Dishonourably Dead: the sad tale of a Great Chesterford Boy and an Anglo-Saxon Dog. A paper presented at the 25th *Annual Australasian Society of Human Biology Conference*, Canberra, 28 November-1 December 2011

APPENDIX 6: THESIS BY COMPILATION

Procedure: Higher degree by research - thesis by compilation and thesis by creative works

Purpose

This document outlines the content, format, and approval process for an HDR Thesis by Compilation or Thesis by Creative Works submission.

Procedure

1. This document is to be read in conjunction with the Research Awards Rules.
2. This procedure supplements the information provided in the Submission and Examination of Higher Degree by Research Theses Procedure. Where information is not varied or detailed in this procedure the Submission and Examination of Higher Degree by Research Theses Procedure prevails.

Thesis by compilation

Content

3. A thesis by compilation includes papers (e.g. articles, chapters) where the student is the sole or joint author that are in the process of being prepared or approved for publication, have been accepted for publication, or have been published.
4. A thesis by compilation contains

    a. An introduction to the field of study and the hypothesis or research questions, how these are addressed through the ensuing chapters, and a general account of the theory and methodological components of the research where these components may be distributed across separate papers/chapters.
    b. Linking text to establish the relationship between one chapter and the next, such as through a foreword to each chapter.
    c. A conclusion drawing together the published papers or works in a cohesive manner, and addresses how the individual publications link to the theory and methodology adopted and evaluate the contribution that the research in the submitted publications makes to the advancement of the research area.

5. Papers evidenced as in the following categories may be included with each presented as an individual chapter in the thesis:

a. Published papers
b. Manuscripts accepted for publication
c. Manuscripts submitted and under review by referees;
d. Manuscripts under revision following referees reports; and
e. Manuscripts in preparation for submission.

6. Unless otherwise approved by the Delegated Authority, a thesis by compilation consists primarily of published papers and manuscripts accepted for publication, and not primarily of manuscripts submitted and under review by referees or manuscripts under revision following referees reports.
7. A thesis by compilation may also include video recordings, film or other works of visual or sonic arts, computer software, digital material or other non-written material for which approval has been given for submission in alternative format.
8. The papers must have been researched and written during the course of the candidature, except in the case of students admitted to a PhD program as a staff member under the Research Awards Rules.
9. The scope and quality of a thesis by compilation is commensurate with the contribution to knowledge expected of a candidate for the relevant degree. The numbers of papers that constitute this requirement may vary between a single long monograph in disciplines such as mathematics to four to five peer-reviewed papers in other disciplines.

Format

10. A thesis by compilation includes a signed declaration that specifies:

a. Title, authorship and publication outlet of each paper.
b. The current status of each paper (In press, Accepted, Under Review, In preparation).
c. The extent of the contribution of the candidate to the research and the authorship of each paper.

11. For each paper where the candidate is not the sole author, either:

a. The collaborating authors sign the declaration; or
b. A senior author signs the declaration on behalf of the collaborating authors

12. The thesis may also include relevant appendices containing additional papers that are not related to the main thrust of the thesis, raw data, programs, questionnaires and other material as deemed appropriate for each discipline.

13. The thesis is otherwise formatted as per the Thesis in Standard Format Section in the *Submission and Examination of HDR Theses Procedure*, although journal formatting can be preserved for appropriate sections.

Process

14. Students submitting by compilation will normally obtain endorsement from their supervisory panel about the format of their thesis more than 12 months prior to submission, and no later than 6 months prior to submission.
15. In considering the request the supervisory panel provides the student with discipline-specific guidance on the appropriate quantity and quality of papers for submission as a thesis, as well as practical guidance about realistic peer-review and publication timeframes in their discipline.
16. Subsequent to endorsement by the supervisory panel, submission of a thesis by compilation requires approval by the Delegated Authority.
17. The Delegated Authority may permit the approval of a thesis by compilation and the composition of that thesis later than 6 months prior to submission in exceptional circumstances.
18. Following submission of the thesis the standard ANU examination procedures will apply.

Other

19. Students who are undertaking a thesis by compilation ensure publisher's agreements do not preclude the inclusion of the published work in their thesis.
20. Only in exceptional circumstances will approval be given to a candidate for a Master of Philosophy or Professional Doctorate to submit a thesis by compilation.

Thesis by creative works

Content

21. A thesis by creative works is an original work which includes one or more of the following: a multimedia or digital work, a film, an exhibition, a performance, a musical composition, a novel, a play, a series of poems, creative art work or other works considered acceptable by the Delegated Authority.
22. The written thesis accompanying the creative work may be a dissertation or an exegesis or a combination of both as approved by the Delegated Authority.
23. The exegesis details the development of the creative work over the duration of the course of study, and provides the broad context for the ideas and precedents which inform the development of the research program. The exegesis enables the candidate to present an account of the research, demonstrating how the work addresses the objectives of the

approved research project, and how the topic(s) of the dissertation or coursework have informed the creative work-based research.

24. For the dissertation, candidates present a substantial academic essay on a topic of relevance to the objectives of the creative work-based research project. The candidate presents a standalone paper or one that supports a lecture recital that is framed within appropriate academic methods through research, documentation and theoretical and conceptual discourse in a form that is relevant to the topic in question.

Length of thesis

25. In the case of a combined body of a Thesis by Creative Works PhD, the written work for a PhD must be a substantial work of 30,000 to 60,000 words that complements the other work submitted.
26. In the case of the combined body of a Thesis By Creative Works MPhil, the written work for an MPhil must be a substantial work of 15,000 to 30,000 words that complements the other work submitted.
27. The additional material submitted or presented in the form of a public recital must be:

    a. A substantial and genuine contribution to research; and
    b. A work of equivalent quality to a written thesis using criteria appropriate to the particular medium in which it is submitted.

28. The submission as a whole must be a coherent contribution to the advancement of knowledge and a pass standard must be achieved in all components.
29. In the case of resubmission being required only that component that has failed to meet the appropriate standard is required to be revised.

Examination of creative work other than a printed thesis

30. The final outcome of the creative work component of the thesis is presented for examination in the form of an exhibition, or audio-visual presentation, recital, lecture recital or in such other form as had been approved by the Delegated Authority in the candidate's research program.
31. The Delegated Authority approves whether artistic practice is examined by a theoretical dissertation or by creative work and written thesis. If a creative work and written thesis is approved, they are be examined as an integrated whole.
32. In cases where the creative work is presented in the form of an exhibition, audio-visual presentation, recital, lecture recital etc, the written thesis is made available to the examiners at least one month before the presentation of the creative work so that the examiners are fully aware of the context of research which has led to the work in the final

presentation. Any additional items such as video of the performance, visual presentation of artwork, recording, are either:

a. supplied to the examiners with the written thesis; or
b. supplied to examiners as soon as the documentation is available.